

Target Generation Facility (TGF) User Manual

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1 Overview

The Target Generation Facility (TGF) at the William J. Hughes Technical Center (WJHTC) provides high fidelity, real-time Simulation capabilities necessary to support Operational Test and Evaluation (OT&E) of new equipment, functions, and capabilities for the National Airspace System (NAS). The TGF also supports Research and Development (R&D) efforts by providing a Simulation of proposed Air Traffic Control (ATC) systems, concepts, and Airspace.

The TGF is composed of three Graphical User Interfaces (GUIs) used to run, control, and monitor a TGF Simulation. The Exercise Control Operator (ECO) is used to configure the specific settings for a Simulation such as Airspace, Flight Plan (FP), and SimPilot Workstations (SPWs). Another GUI is the Simulation Action Viewer (SAV) which is used to monitor the status of Aircraft in a Simulation. Finally, a Message Window titled “Simulation Output” is used to display informational messages.

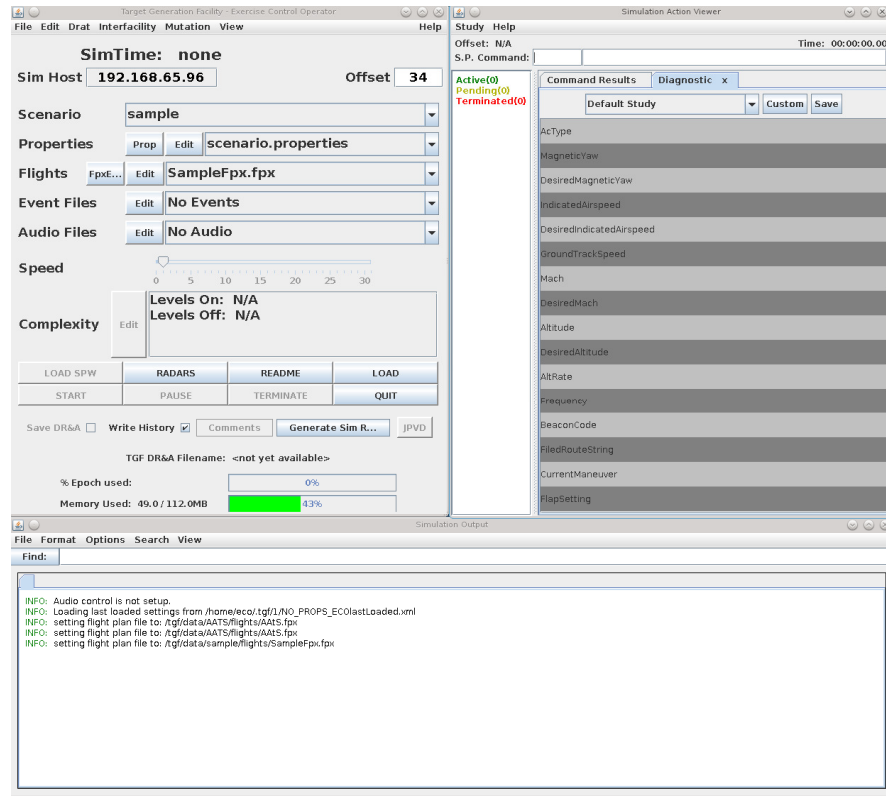


Figure 1 TGF GUI

The following documentation includes a user's manual, with detailed illustrations and descriptions of the GUIs. In addition, a description of the customizable settings is provided.

1.1 Documents Referenced

The following is a list of documents referenced by this manual. All documents are available online as a PDF file from <http://www.faa.gov/go/tgf/>:

- “TGF Data Reduction and Analysis Toolkit (DRAT)”
- “TGF XML Flight Plan Editor”
- “TGF Java Plan View Display”
- “TGF Radar Boxes (RBX)”
- “TGF Simulation Pilot Operations (SPO)”
- “TGF XML Editor (XMLE)”
- “TGF XML Flight Plan Format”

1.2 Acronym List

The following is a list of Acronyms used in this document.

AAML	Airspace Action Markup Language
AAR	Alternative Arrival Route
ACID	Aircraft Identifier
AD	Aircraft Diagnostic
ADR	Alternate Departure Route
ATC	Air Traffic Control
CCCS	Capstone Communications Control System
CSV	Comma Separated Values
DIS	Distributed Interactive Simulation
DRAT	Data Reduction Analysis Toolkit
ECO	Exercise Control Operator
FP	Flight Plan
FPA	Fixed-Posting Area
FPX	XML Flight Plan
GUI	Graphical User Interface
HFL	Human Factors Laboratory
JAR	Java Archive
JPVD	Java Plan View Display
MD	Message Digest
NAS	National Air Space
OT&E	Operational Test and Evaluation
R&D	Research and Development
RBX	Radar Box

SAV	Simulation Action Viewer
SID	Standard Instrument Departure
SPW	SimPilot Workstation
STAR	Standard Terminal Arrival Route
SVN	Subversion
TGF	Target Generation Facility
TI	Transfer Initiate
VM	Virtual Machine
WJHTC	William J. Hughes Technical Center
XML	Extensible Markup Language
XSD	XML Schema Definition

2 Quick Start

The following information will enable you to start a Simulation without knowing all the specific information required. For a detailed explanation of everything needed please read the rest of this document.

2.1 To Start TGF

Start a command line terminal and type in “java -Xmx1G -jar <full path and file name of TGF Jar File to run> -p <full path and file name of ECO properties file to initialize ECO with>. For example “java -Xmx1G -jar /tgf/lib/tgf.jar -p /tgf/properties/eco.props”. The TGF GUI will be displayed.

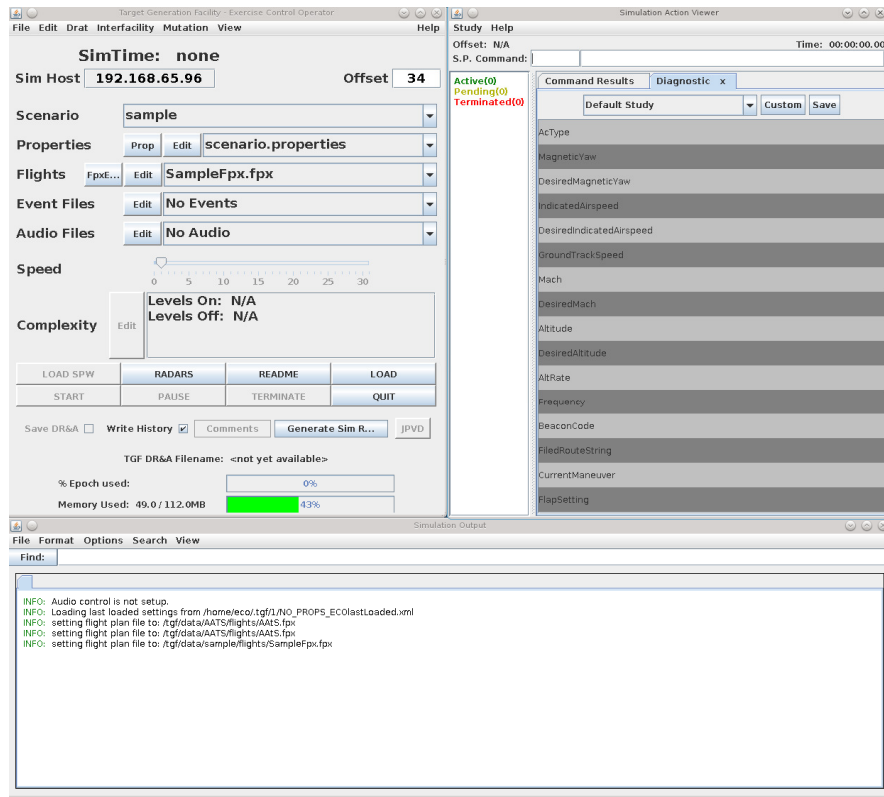


Figure 2 TGF GUI

The Sim Host displays your IP Address and the Offset displays your IP Port Offset. Both fields are automatically discovered, but if that fails, it must be corrected. The user must confirm that both fields are correct in order for the SimPilot Workstations to work properly. For more information about these settings, see Sections 4.2.2 Sim Host and 4.2.3 Offset.

2.2 Choose options for Simulation

The following choices must be made before starting the ECO:

- “Scenario” – The default Scenario is displayed; if this is not the desired Scenario; the user must choose another Scenario from the dropdown box.
- “Properties” – The default Scenario Properties File is then displayed. The user may choose another Scenario Properties File from the dropdown box.
- “Flights” – The default Flight Plan is displayed. The user may choose another Flight Plan from the dropdown box.

The default Files are loaded from the ECO Properties file passed in using the `-p` Command Line Option or selected using the last loaded Files. Please see TGF’s Properties Editor for more information on the ECO Properties file. For more information on the `-p` Command Line Option please see Section 9 Command Line Options. All other selections are optional, and are further described in later chapters.

Radars can be set up, if desired, before loading the Simulation.

After configuring the above, the Load Button can be pressed to load the Simulation.

If you would like to use SimPilot Workstations (SPWs), they must be configured by pressing the “Load SPW” configuration button, which becomes available after the Simulation has been loaded. For more information on configuring SPWs please see Section 4.6.4 Load SPW Button.

After the Simulation loads and the ‘Hold your horses’ Window disappears, the Simulation can be started by pressing the START button. Before starting the Simulation, look at the number of pending Aircraft to see if all the Aircraft for the specified Flight Plan are loaded: if they did not load, there may be some configuration error. Everything needed to run a Simulation will be described in more detail later in this document.



Figure 3 Hold your horses' Window

2.3 To Stop the Simulation

To end the Simulation, press the Terminate Button.

2.4 To Exit TGF

To close the TGF GUIs, press the Quit Button.

3 Running TGF

This Section contains information about running TGF. Please contact the TGF Support Personnel for help installing or updating TGF on a System.

3.1 Available Platforms

The TGF can be run from any platform which supports the Java Virtual Machine (VM) including:

- Personal PC
- Workstation
- Mainframe
- Unix/Linux
- Mac

3.2 Requirements to Run TGF

To run a TGF you will need the following:

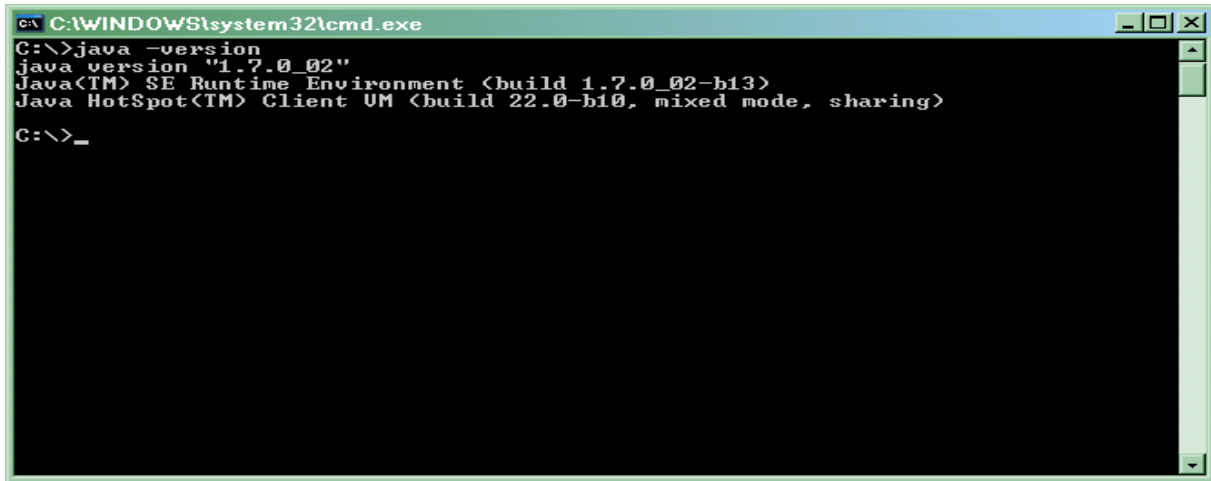
- It is best to contact the TGF Support Personnel to find out what is the latest version of Java necessary to run TGF. Right now, it is recommended that TGF run with at least Java version 7 update 2. Later versions of Java 7 may also work. Java downloads are available online at <http://www.oracle.com/technetwork/java/javase/downloads/index.html>.
- TGF Software in Java Archive (JAR)
- Data files in TGF format

To run a TGF Simulation the following may be required:

- Additional PCs or Workstations to act as SimPilot Workstations
- Additional PCs or Workstations to act as a Radar Device
- Voice/Audio Equipment
- Air Traffic Controllers
- SimPilots (optional)

3.2.1 Java Version Notes

To find the version of Java your System is running open a command prompt terminal and type in `java -version` and hit enter.



```
C:\WINDOWS\system32\cmd.exe
C:\>java -version
java version "1.7.0_02"
Java(TM) SE Runtime Environment (build 1.7.0_02-b13)
Java HotSpot(TM) Client VM (build 22.0-b10, mixed mode, sharing)
C:\>_
```

Figure 4 Get Java Version

If you try to run TGF with an old version of Java you will get an Unsupported Class Version Error.

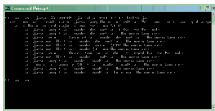


Figure 5 Java Unsupported Class Version Error

4 Exercise Control Operator

This Section contains detailed information about the ECO which is used to configure the specific settings for a Simulation.

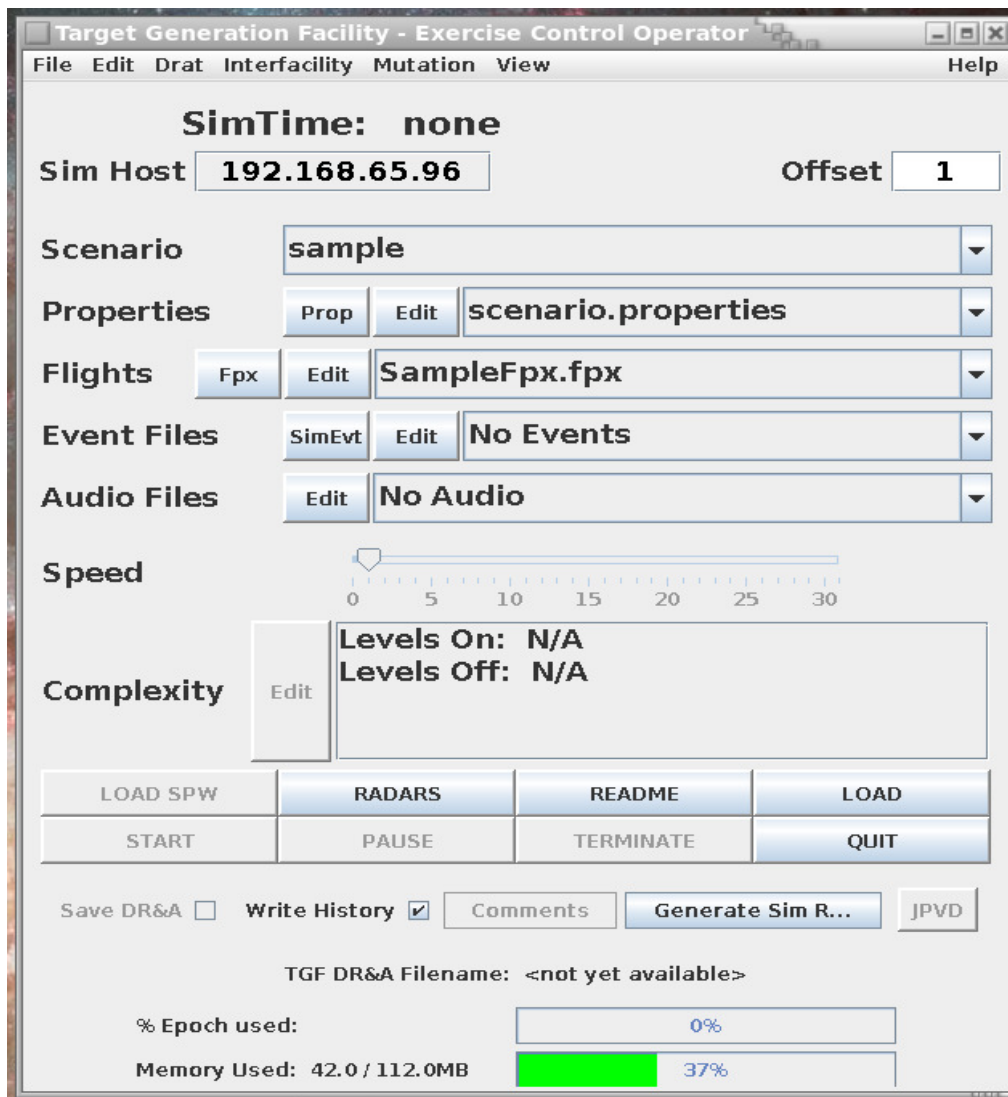


Figure 6 ECO GUI

4.1 ECO Menu Bar

This Section contains information about the Menu Bar found at the top of the ECO GUI. The Menu Bar documented in this manual is the standard ECO Menu Bar. There are other optional menus that can be added to this menu bar not covered in this manual, for example the Capstone Communications Control System (CCCS) GUI Menu.



Figure 7 ECO Menu Bar

4.1.1 File Menu

The ECO's File Menu Option allows the user to do several things.

The New Properties Menu Option allows the user to create a new TGF Property file using TGF's Properties Editor. The ECO uses properties files to configure itself and the Scenario. For example the eco.props File is usually used to configure the directory that the ECO looks for Scenarios in, while the scenario.properties file is typically used to specify the Extensible Markup Language (XML) Airspace data files to load.

The New FPX Menu Option allows the user to create a new TGF XML Flight Plan (FPX) using TGF's FPX Editor. For more information on TGF's FPX Format please see "TGF XML Flight Plan Document" located under User Manuals at www.faa.gov/go/tgf.

The File Menu also provides functionality to determine if the Scenario's data has changed. This functionality is useful if checking the data between two remote sites.

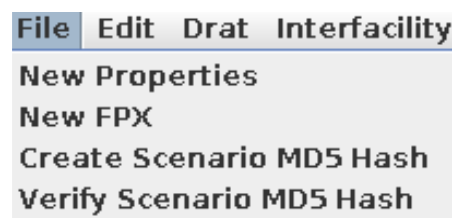


Figure 8 ECO File Menu

The Create Scenario MD5 Hash Menu Option allows the user to create a Message Digest (MD) file that can be used to check if a Scenario's data has changed. The user must provide their name and a reason for the creation of the Check File.

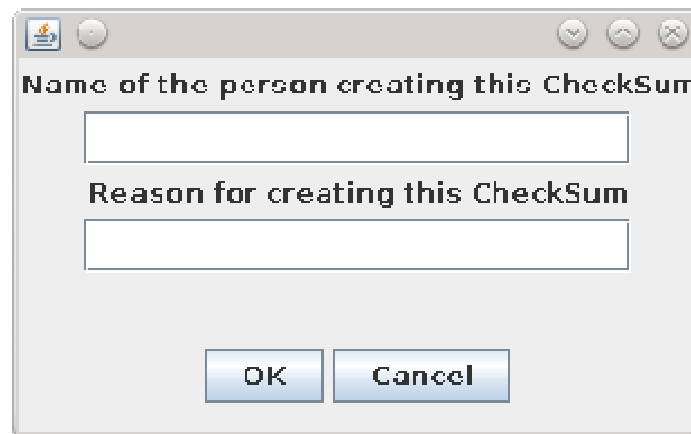


Figure 9 Create MD5 Hash File

The user will be notified when the creation of the Check File has successfully finished or if there is a problem. The file created is called ".md5sum" and will be saved in the selected Scenario's data directory.

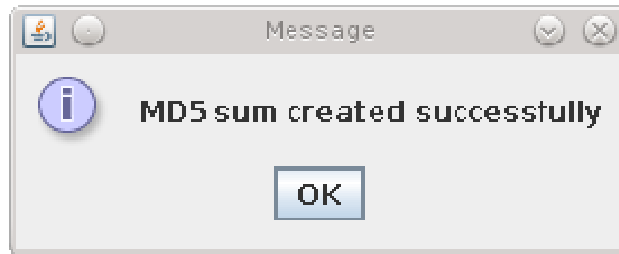


Figure 10 MD5 Hash Successfully Created

The Verify Scenario MD5 Hash Menu Option checks the data against the “.md5sum” located in selected Scenario’s data directory and opens a window which displays the names of the files checked, whether there was a change, and the items MD5 Hash code.

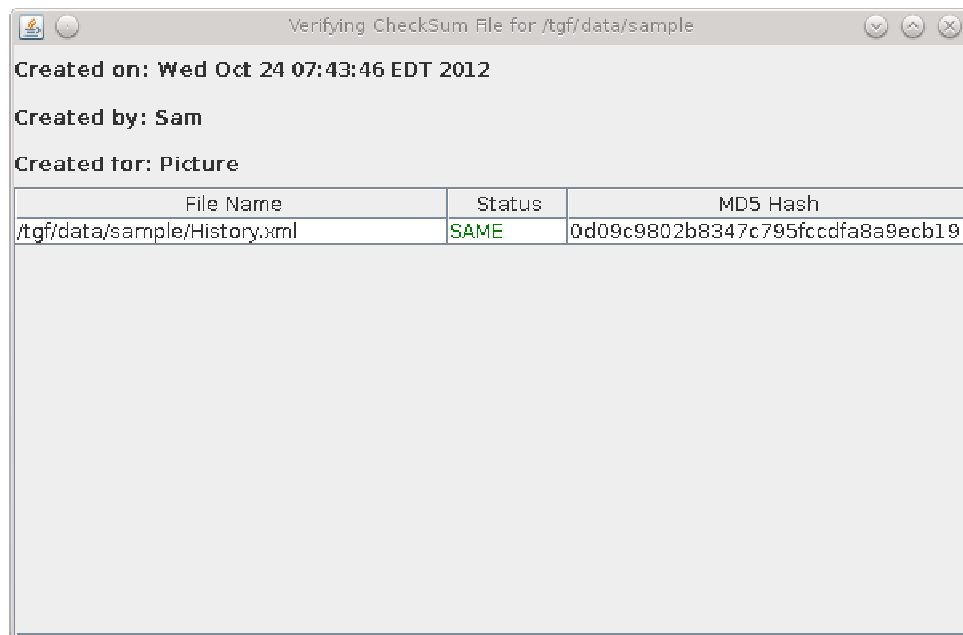


Figure 11 Verify MD5 Hash

4.1.2 Edit

The ECO’s Edit Menu allows the user to edit the various TGF XML files used to configure the Scenario using the TGF XML Editor. For more information on TGF’s XML Editor please see “TGF XML Editor (XMLE)” located under User Manuals at www.faa.gov/go/tgf.



Figure 12 ECO Edit Menu

The Offset Lock Menu has the Edit Message Menu Option which allows the user to edit the message displayed to others if they try to run on the offset the user is currently using.



Figure 13 Offset Lock Menu



Figure 14 Edit Offset Message

4.1.3 Drat

The Drat Menu allows the user to start TGF's Data Reduction Analysis Toolkit (DRAT) preconfigured. DRAT will be configured to use the current Simulation's TGF Recording File, if there is one.

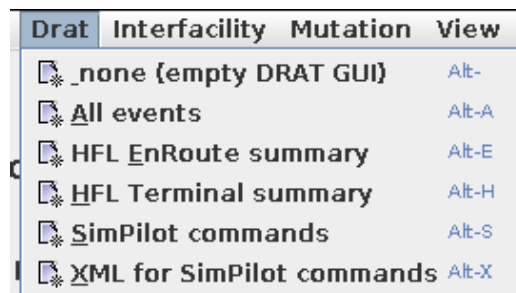


Figure 15 ECO Drat Menu

The ‘none (empty DRAT GUI)’ Menu Option brings up a blank DRAT. The ‘All events’ Menu Option brings up a DRAT configured to output all data. The ‘HFL EnRoute summary’ Menu Option brings up DRAT configured to run the Human Factor’s Laboratory (HFL) EnRoute Summary Factory. The ‘HFL Terminal summary’ Menu Option brings up DRAT configured to run the HFL Terminal Summary Factory. The ‘SimPilot commands’ Menu Option brings up DRAT configured to output SimPilot Command Result information. The ‘XML for SimPilot commands’ Menu Option brings up DRAT configured to create an XML SimPilot Event file.

For more information on DRAT please see the “TGF Data Reduction and Analysis Toolkit (DRAT)” located under User Manuals at www.faa.gov/go/tgf.

4.1.4 Interfacility

The Interfacility Menu allows the user to generate Transfer Initiate (TI) Messages that are saved to a TGF SimEvent File that can be loaded into the Simulation before a Scenario is loaded. For both Menu Options the user must be able to supply the names of the Source and Destination Facilities, and the SimEvent File to save the message to.

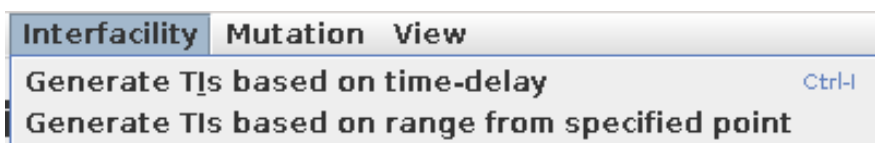


Figure 16 ECO Interfacility Menu

The Generate TIs based on time-delay Menu Option allows the user to generate a TI Message that is sent out a given number of seconds after an Aircraft’s starts in the Simulation.

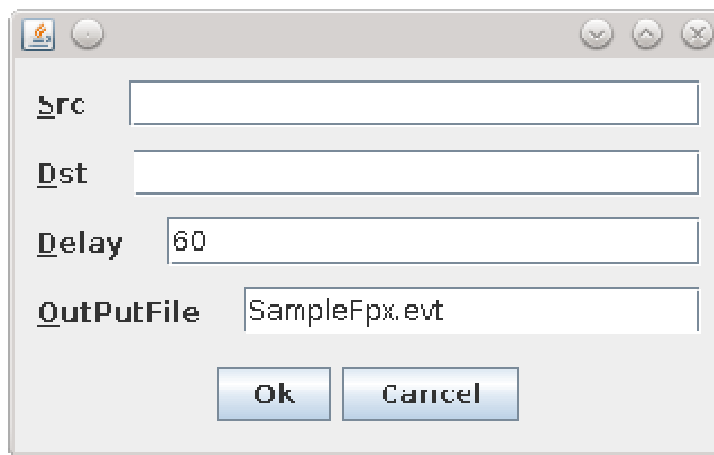
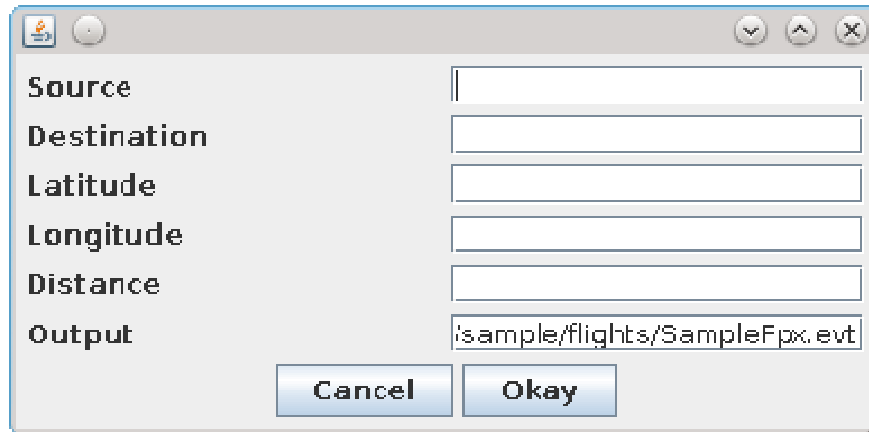


Figure 17 Generate Time Delayed TI Message

The Generate TIs based on range from specific point Menu Option allows the user to generate a TI Message that is sent out when Aircraft is a given distance (in nautical miles) from a given latitude/longitude point.



A dialog box titled "Generate Point TI Message" with a standard Windows-style title bar. It contains six input fields on the right, each corresponding to a label on the left: "Source", "Destination", "Latitude", "Longitude", "Distance", and "Output". The "Output" field contains the text "/sample/flights/SampleFpx.evt". At the bottom of the dialog are two buttons: "Cancel" and "Okay".

Figure 18 Generate Point TI Message

4.1.5 Mutation

The Mutation Menu provides the user the ability to modify certain Airspace data into the TGF.



Figure 19 ECO Mutation Menu

The Airspace Action Markup Language (AAML) Config Menu Option is enabled once the Simulation is loaded. This Menu Option allows the user to turn on/off Regions imported from the AAML file via the AAML Configuration Dialog.

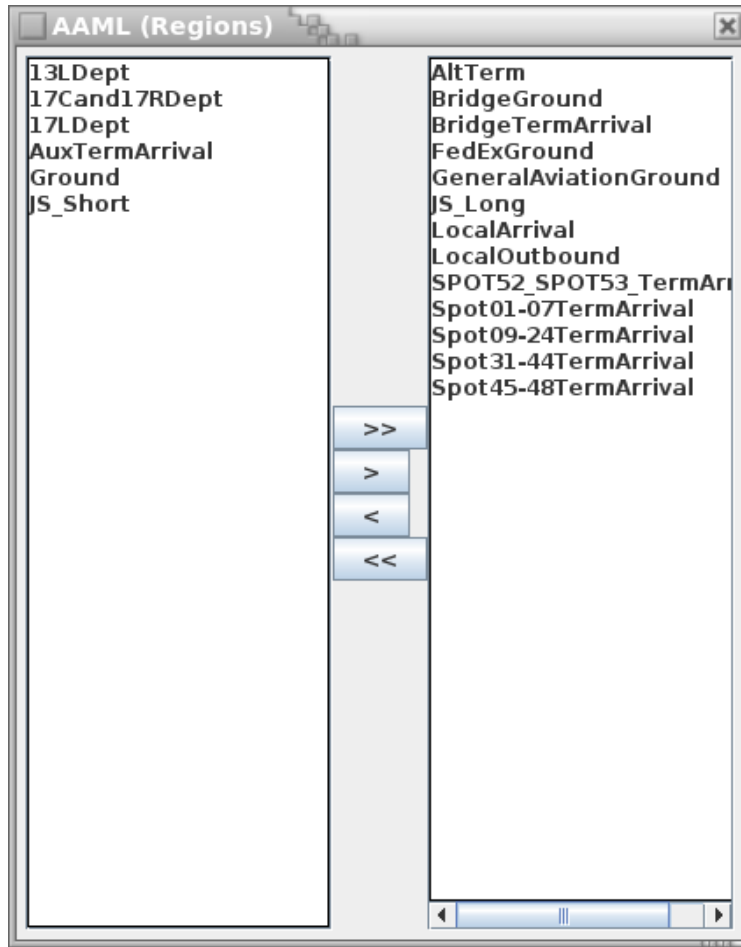


Figure 20 AAML Configuration Dialog

For more information on how to use the AAML Configuration Dialog to turn on and off Regions see the “TGF Java Plan View Display” Manual’s Configuration Dialog Section available at www.faa.gov/go/tgf.

To apply changes to the Regions close the Dialog. Note: Changes to Regions are not currently reflected on TGF’s JPVD.

4.1.6 View

The View Menu allows the user to view the Radars, Output Window, and the Simulation Action Viewer (SAV). This functionality is useful if the user closes one of the windows and then later decides they want to view the window again.

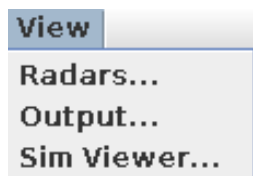


Figure 21 ECO View Menu

4.1.7 Help

The Help Menu allows the user to display helpful information.

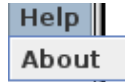


Figure 22 ECO Help Menu

The About Menu Option will display the About Box, which contains details about the TGF Software. The information displayed is important for helping to troubleshoot problems. For example, the Subversion (SVN) Version Number is useful if there is a problem running TGF. This Number is found on the About Box next to “SVN Version:” for example in Figure 23 the SVN Version Number is 38124.

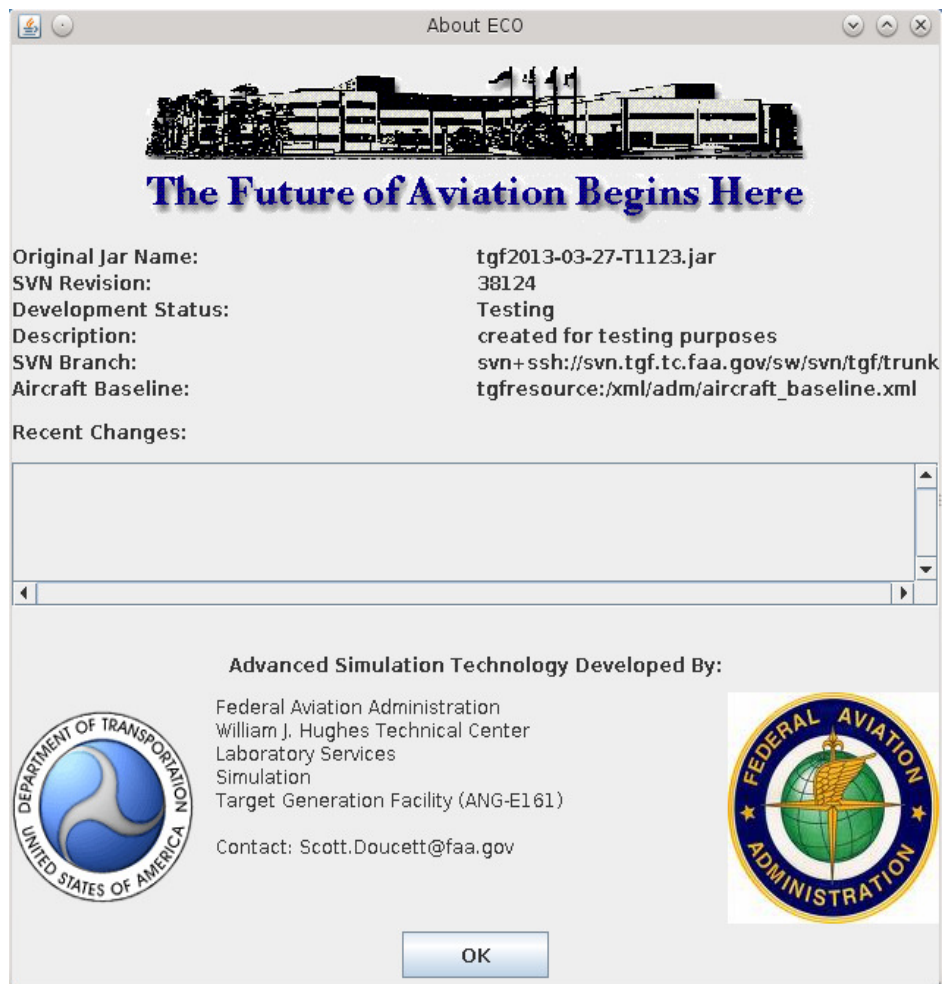


Figure 23 About Box

4.2 Simulation Information Panel

This Section contains details on the Simulation Information Panel which contains information about the time in the Simulation, the box the Simulation is running on, and the offset.



Figure 24 Simulation Information Panel

4.2.1 Sim Time

The SimTime Field will show the time elapsed since the Simulation started, or will show none if the Simulation has not been started. The time is in HH:MM:SS where:

- H is hours since the start of the Simulation.
- M is minutes in an hour since the start of the Simulation.
- S is seconds in minutes since the start of the Simulation.
- Depending on the way a Simulation is configured fractional seconds may be shown.

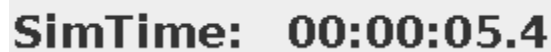


Figure 25 SimTime

4.2.2 Sim Host

Sim Host will display the IP Address of the machine running TGF. The user may need to change the address if the address the machine is known to the network. For example 127.0.0.1 is the internal address while 192.168.65.96 is external to the network address.

4.2.3 Offset

Offset is a number used to identify all Simulation related network traffic. If the Simulator finds this offset in your environment or defined in the scenario.properties file, it will be added to the base port (which is currently 3200). The resulting port number will be used to broadcast and receive Distributed Interactive Simulation (DIS) Protocol Data Units. For Simulations that do not wish for user-specific settings, the current methodology is to add the property “BasePortOffset = <offset number>” to the eco.properties file for example, “BasePortOffset = 21. An additional method of setting the offset is by defining a variable in the user’s environment: if a user wishes to always load a specific offset, set the SCENARIO_PROPERTIES environment variable to include the option: “-DBasePortOffset=<offset number> for example, “-DBasePortOffset=21”.

If you are using a network, SPWs must be configured to the same offset as the ECO to work.

Warning: Running a TGF Simulation on the same offset as someone else on a visible network can cause unexpected Aircraft behavior such as the position of Aircraft jumping around on SPWs.

4.3 Scenario Configuration Panel

The Scenario Configuration Panel allows the user to configure the settings a Simulation before it is loaded. Once a Simulation is loaded, the components that allow the user to configure these settings are disabled.

The image shows a software interface for configuring a simulation scenario. It consists of five rows, each with a label on the left and a control area on the right. The 'Scenario' row has a dropdown menu showing 'sample'. The 'Properties' row has 'Prop' and 'Edit' buttons followed by a dropdown showing 'scenario.properties'. The 'Flights' row has 'Fpx' and 'Edit' buttons followed by a dropdown showing 'SampleFpx.fpx'. The 'Event Files' row has 'SimEvt' and 'Edit' buttons followed by a dropdown showing 'No Events'. The 'Audio Files' row has an 'Edit' button followed by a dropdown showing 'No Audio'. All dropdown menus have a small downward arrow on the right side.

Scenario	sample		
Properties	Prop	Edit	scenario.properties
Flights	Fpx	Edit	SampleFpx.fpx
Event Files	SimEvt	Edit	No Events
Audio Files	Edit	No Audio	

Figure 26 Scenario Configuration Panel

4.3.1 Scenario

The Scenario Field allows the user to select a TGF Scenario to load from a list. The Scenario contains information about the Airspace that the Aircraft in the Simulation will fly in.

4.3.2 Properties Panel

The Properties Panel allows the user to select the TGF Scenario Properties File to load. In addition, the user can edit the selected Properties File. If the 'Prop' Button is pressed, then the selected Properties File is loaded into the TGF's Properties Editor. If the Edit Button is pressed, then the selected Properties File is loaded into a Text Editor.

The image shows a close-up of the 'Properties' section of the configuration panel. It features a label 'Properties' on the left, followed by two buttons: 'Prop' and 'Edit'. To the right of these buttons is a dropdown menu that currently displays 'scenario.properties' and has a small downward arrow on its right side.

Properties	Prop	Edit	scenario.properties
------------	------	------	---------------------

Figure 27 Properties Panel

4.3.3 Flights

The Flights Panel allows the user to select the TGF FPX File to load. In addition, the user can edit the selected FPX File. If the Fpx Button is pressed, then the selected FPX File is loaded into the TGF's FPX Editor. If the Edit Button is pressed, then the selected FPX File is loaded into a Text Editor.



Figure 28 Flights Panel

4.3.4 Event File

The Event Files Panel allows the user to select the TGF XML SimEvent File to load. In addition, the user can edit the selected SimEvent File. If the ‘SimEvt’ Button is pressed, then the selected SimEvent File is loaded into the TGF’s SimEvent Editor. If the Edit Button is pressed, then the selected SimEvent File is loaded into a Text Editor. A Value of “No Events” is used to signify that no SimEvent File should be loaded.

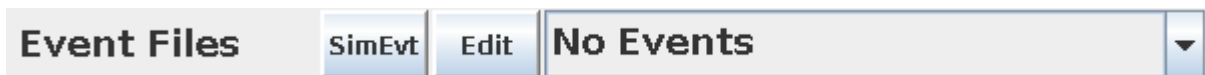


Figure 29 Event Files Panel

4.3.5 Audio File

The Audio Files Panel allows the user to select the TGF XML Audio File to load. In addition, the user can edit the selected Audio File. If the Edit Button is pressed, then the selected Audio File is loaded into a Text Editor. A Value of “No Audio” is used to signify that no Audio File should be loaded.

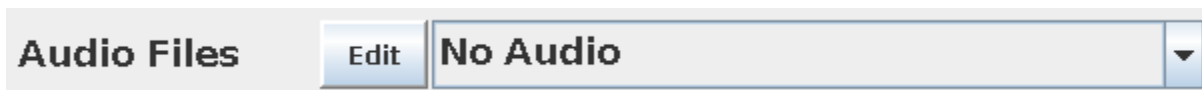


Figure 30 Audio Files Panel

4.4 Speed Panel

The Speed Panel allows the user to change how fast time goes by. The Speed Panel is not enabled until after a Simulation loads. The value indicates a time multiplier. For example a value of 10 means Simulation time accelerates 10 times normal time.

Warning: Change speed of time may cause external Systems to have problems as these Systems may not be designed to handle time speeding up.



Figure 31 Speed Panel

The greater the time multiplier the user selects the darker the red of the Speed Panel’s background.

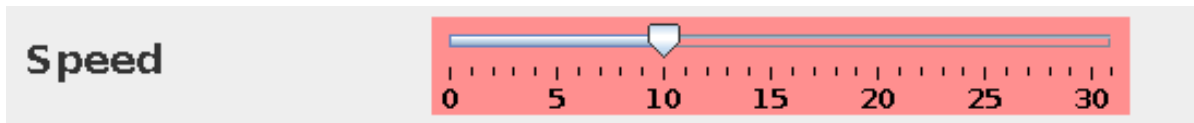


Figure 32 Speed Panel with Change

4.5 Complexity Panel

The Complexity Panel allows the user to change the flexibility of flying a subset of flights from one large traffic sample. This field identifies the complexity levels currently enabled. The Complexity Panel is not enabled or filled in until after a Simulation loads.

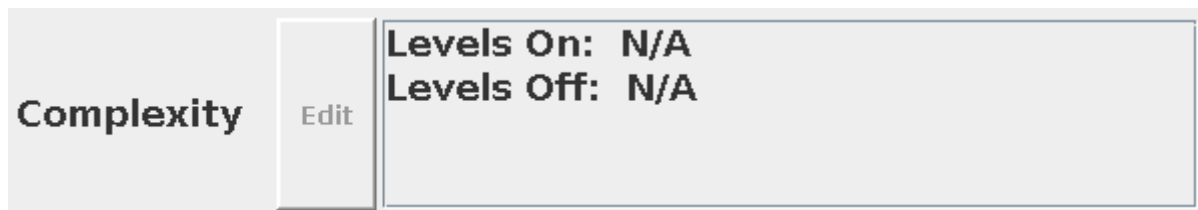


Figure 33 Complexity Panel before Simulation Loaded

Once the Simulation is loaded then the Complexity Panel will fill-in with the complexity information available in the selected Flight Plan File. The user can dynamically change the enabled complexities at any time by pressing the Edit Button. The Complexity Dialog will appear.

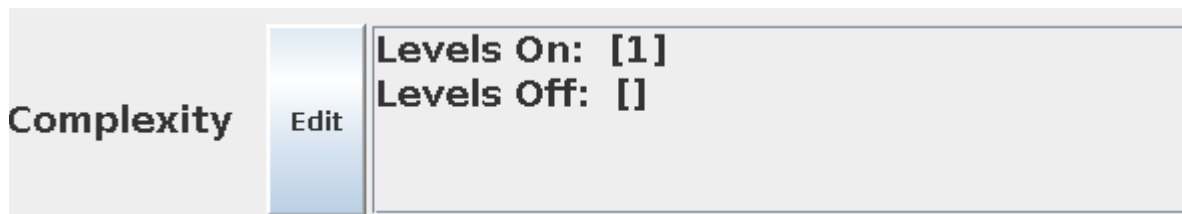


Figure 34 Complexity Panel after Simulation Loaded

4.5.1 Complexity Dialog

The Complexity Dialog allows the user to change which Complexity Settings are included in a Simulation. If the Complexity Settings are changed during the Simulation, then Pending Flights with the excluded complexity will not start unless given a START SimPilot Command.

For more information on how to use the Complexity Dialog to turn Complexities on and off, see the “TGF Java Plan View Display” Manual’s Configuration Dialog Section available at www.faa.gov/go/tgf.

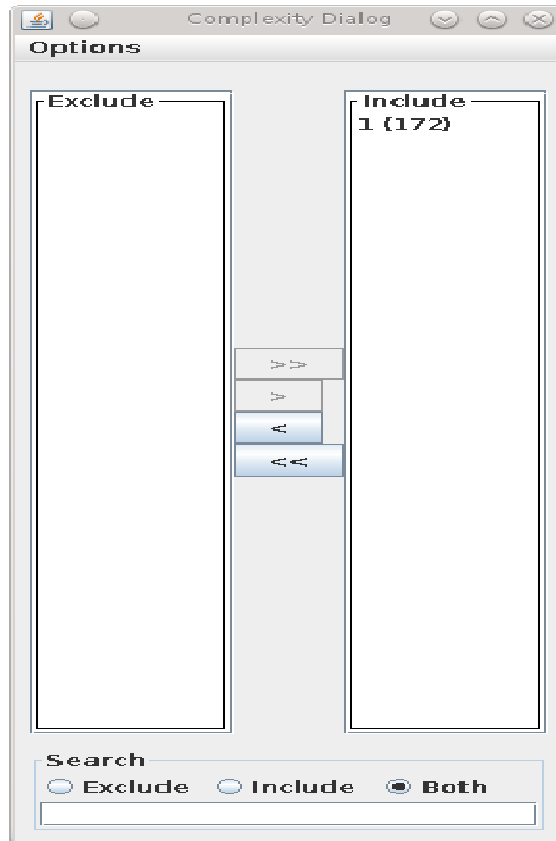


Figure 35 Complexity Dialog: Individual Level Version

Closing the Complexity Dialog will apply the changes made. If all Complexity Levels are turned off, then the user will be asked to confirm they wanted to do so before closing the Complexity Dialog.

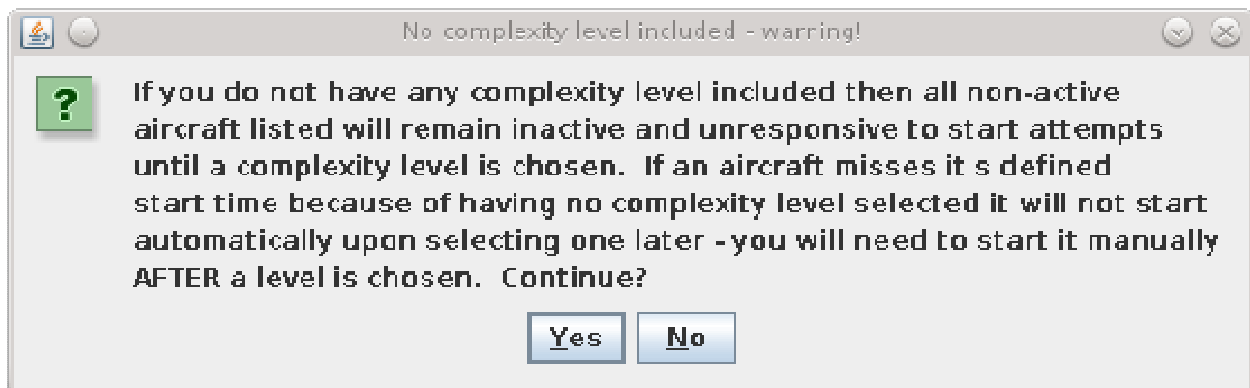


Figure 36 Turn Off All Complexities Query Box

Complexities can be view by either individual levels or groups of levels.

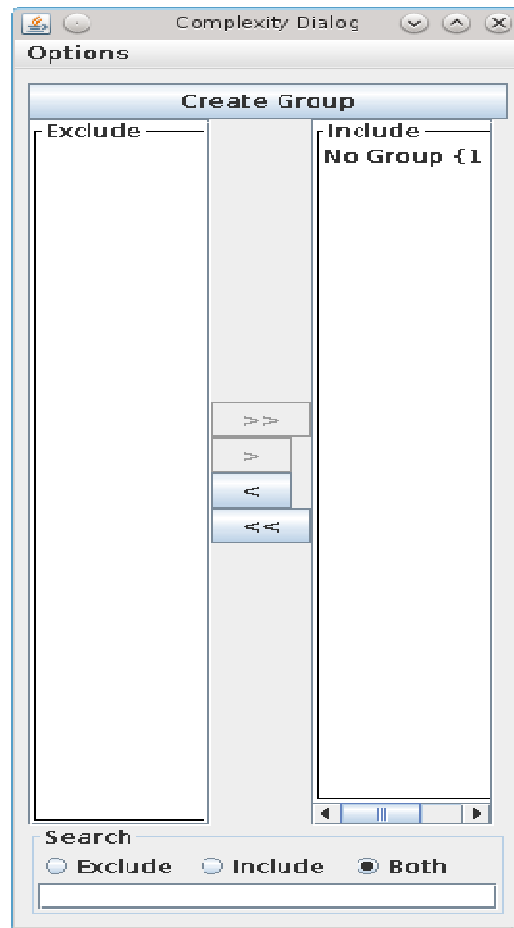


Figure 37 Complexity Dialog: Group Version

4.5.1.1 Complexity Dialog Options Menu

The Complexity Dialog's Options Menu allows the user to view individual Levels by Number, Name, or Both.

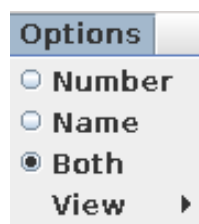


Figure 38 Complexity Dialog Options Menu

In addition users can select to view either individual levels or groups of levels by selecting the View Menu.



Figure 39 Complexity Dialog View Menu

4.5.1.2 Create a Complexity Group

To Create a Complexity Group, click on the Create Group Button at the top of the Group Version of the Complexity Dialog.



Figure 40 Create Complexity Group Button

A Window will appear asking for the name of the Complexity Group.

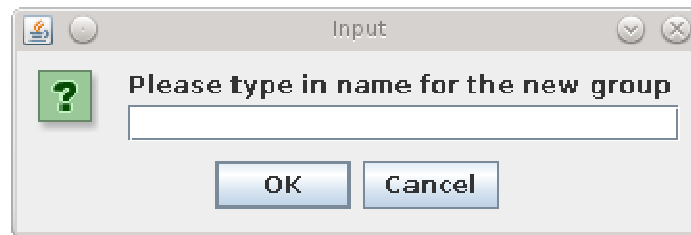


Figure 41 Create Complexity Group

Once the Complexity Group is created the user can edit the group and add individual levels.

4.5.1.3 Edit a Complexity Group

To edit a Complexity Group right-click on the name of the group and the Edit Group Dialog will appear. For more information on how to include/exclude Complexities in Group see the “TGF Java Plan View Display” Manual’s Configuration Dialog Section available at www.faa.gov/go/tgf.

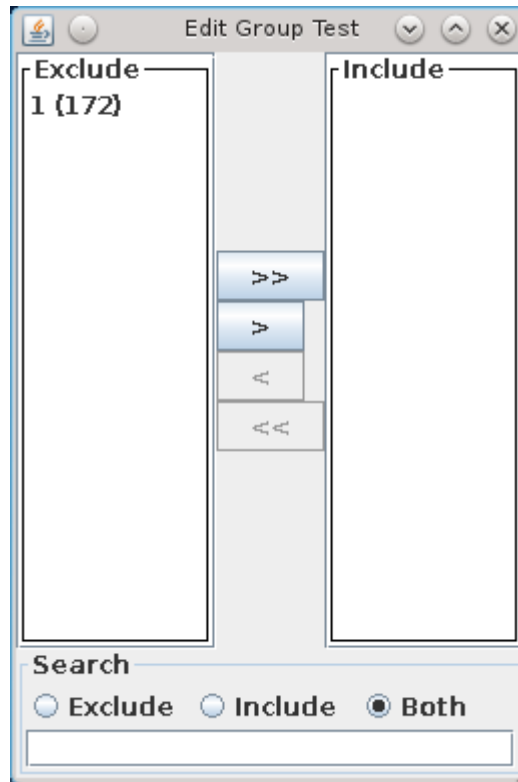


Figure 42 Edit Complexity Group Dialog

Any individual Complexity Level that is not part of another Complexity Group is included as part of a group called “No Group”. Closing the Edit Complexity Group Dialog will apply the changes made.

4.6 Simulation Interaction Button Panel

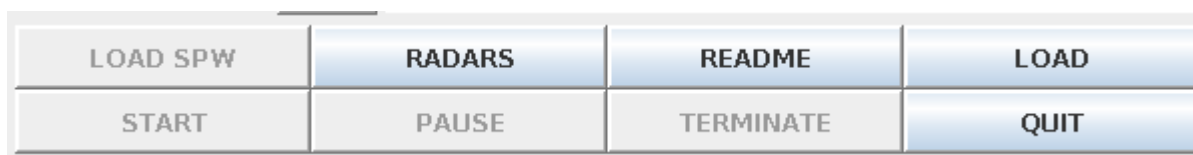


Figure 43 Simulation Interaction Button Panel

4.6.1 Load Button

The Load Button allows the user to load the Simulation once the Simulation is configured the way the user desires. Once the Button is pressed it will be disabled and the ‘Hold your horses’ Window will appear while the Airspace, Flight Plan, and other data are loaded into TGF. This may take a few minutes depending on the size of the data loaded and the System that TGF is running on.



Figure 44 Hold your horses Window

Once the Simulation is loaded the 'Hold your horses' Window will disappear and the Start Button will be enabled.

4.6.2 Read Me Button

The 'Read Me' Button is used to display and record Simulation specific notes. This file is used for whatever the Simulation Operator decides it should be used for.

4.6.3 Radars Button

When the 'Radars' Button is pressed, the Radar Boxes (RBX) Control GUI is displayed. For more information on the RBX Control please refer to "TGF Radar Boxes (RBX)" at www.faa.gov/go/tgf.

4.6.4 Load SPW Button

Once the TGF Simulation has finished loading the 'Load SPW' Button will be enabled. When the Button is pressed, the SimPilot Manager GUI is displayed. This GUI allows the user to interact with known Systems that are configured to run TGF SimPilot Workstations (SPWs) and Utilities. Note: The 'Load SPW' Button may be pressed at any time but it is recommended that the SPWs/Utilities be configured before the Simulation is started.

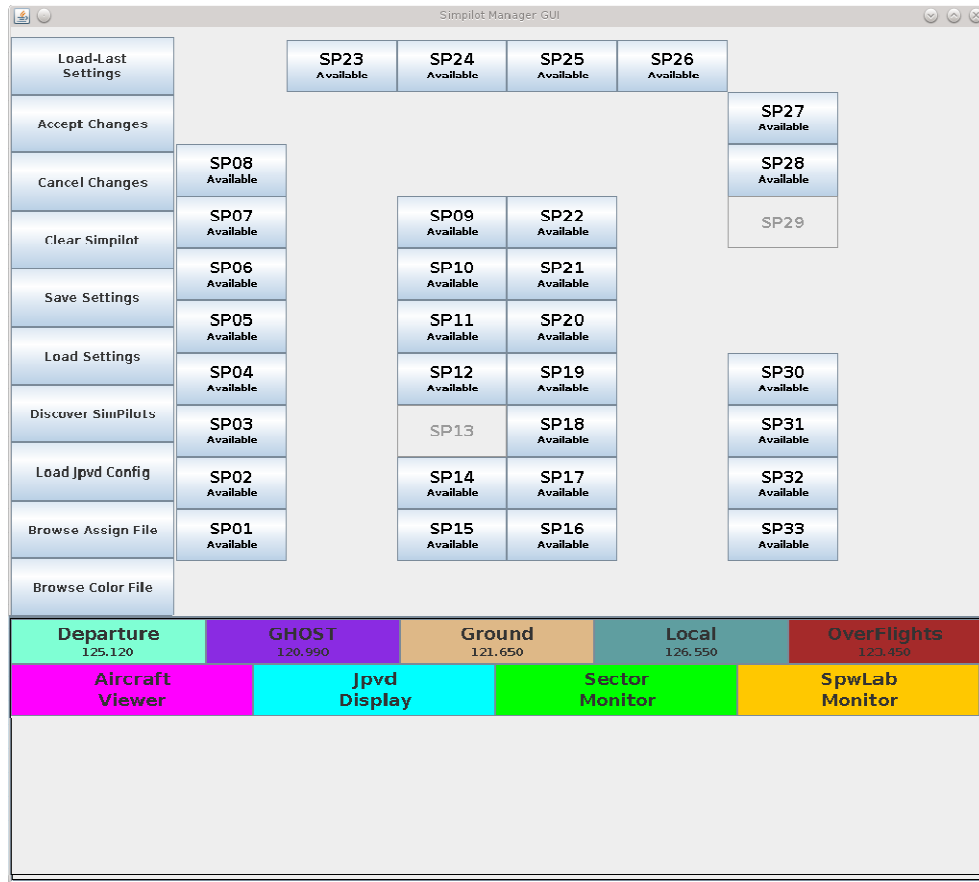


Figure 45 SimPilot Manager GUI

The SimPilot Manager GUI can be broken into 3 Sections: the ‘SPW Button’ Panel, the ‘SimPilot Lab Layout’ Panel, and the ‘Sector and Utility’ Panel.

4.6.4.1 SimPilot Manager Button Panel

The SimPilot Manager Button Panel contains the following buttons:

- Load Last Settings – allow the user load the Last Lab Settings used for the loaded Scenario. If there is no Last Used Settings for the loaded Scenario, then this Button is disabled.
- Accept Changes – allows the user to accept changes made to the SimPilot Manger GUI.
- Cancel Changes – allows the user to cancel changes made to the SimPilot Manger GUI.
- Clear SimPilot – allows the user to un-assign a selected SPW/Utility from a Workstation.
- Save Settings – allows the user to save how the Lab is configured to a .spcfg file.
- Load Settings – allows the user to load a saved Lab configuration file. These configuration files typically end with a .spcfg file extension.

- Discover SimPilots – allows user to retry the known Workstations to see if there has been a change in their availability status.
- Load JPVD Configuration – allows the user to load a JPVD Configuration file other than the default one specified in the loaded Scenario's settings.
- Browse Assign File – allows the user to load a SPW Assign file which is used to assign Aircraft to a specific SPW.
- Browse Color File – allows the user to load a file that is used to send special instructions on what color Aircraft should appear based on certain characteristics such as their equipment.

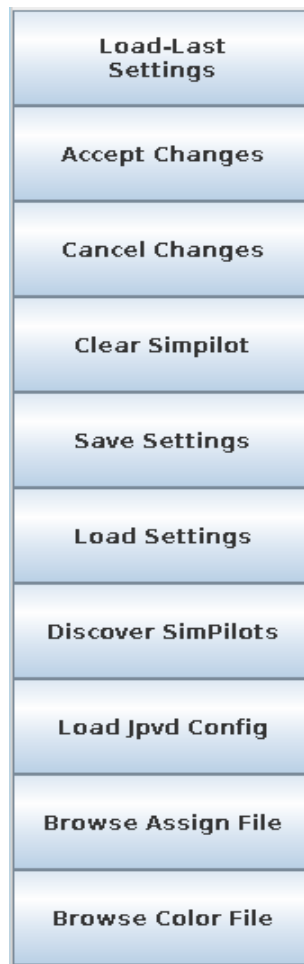


Figure 46 SimPilot Manger Button Panel

4.6.4.2 SimPilot Lab Layout Panel

The SimPilot Lab Layout consists of Buttons that represent Workstations that the SimPilot Manager can assign different functionalities to. The user can assign a Workstation to either a given Sector via TGF's SPW or a TGF Utility. In addition, this Panel is used to display the status of all the known Workstations in a Lab via a button for each Workstation.

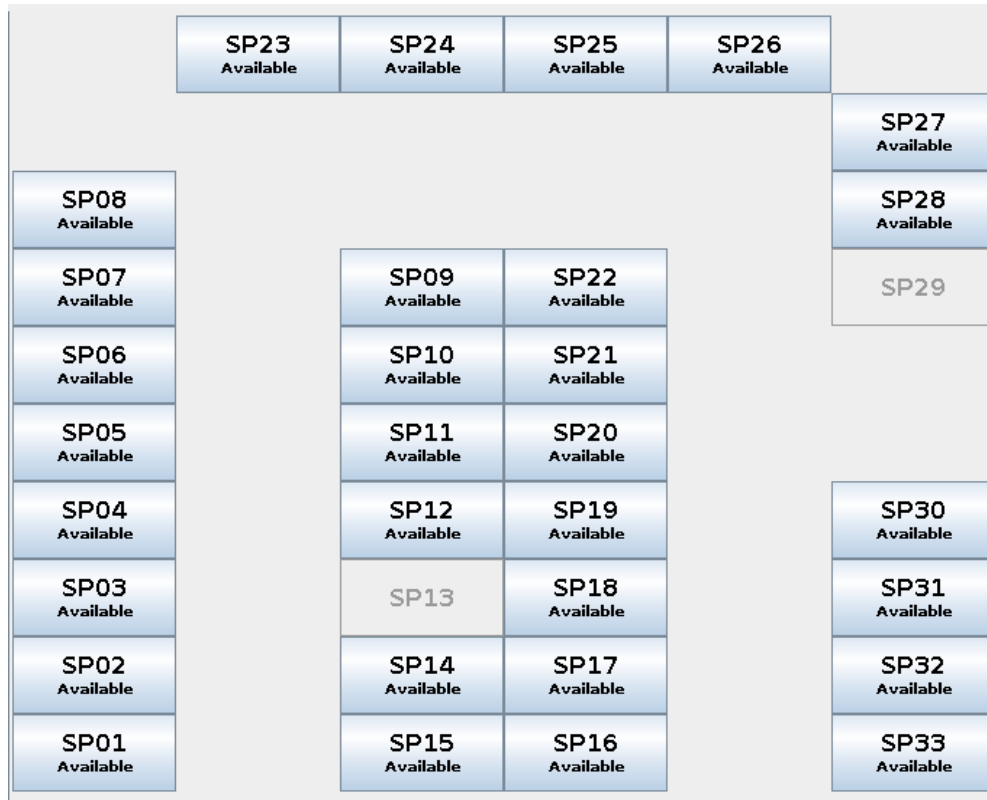


Figure 47 Sample SimPilot Lab Layout Panel

4.6.4.2.1 Workstation in Use/Unresponsive

If a Workstation Button is disabled it means that either the Workstation is currently unresponsive or in use by another Simulation. If a Workstation is unresponsive the user can try clicking on the Discover SimPilot Button to see if the responsiveness of the Workstation changes.

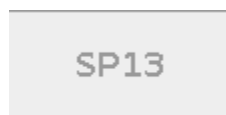


Figure 48 Unresponsive Workstation

If the Workstation is in use by another Simulation the user will either have to select another Workstation or wait until the other Simulation is finished with the Workstation. The Workstation Button will indicate address of ECO and Offset of Simulation that is using the given Workstation.

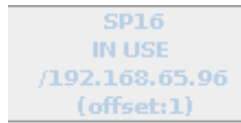


Figure 49 Workstation in Use by another Simulation

4.6.4.2.2 Assigned Workstation Status

The Workstation Buttons use background and text color to indicate status.

The color of the background of a Workstation Button on the SimPilot Lab Layout Panel is used to indicate whether a Workstation is available or assigned. When assigned, the Workstation Button will match the color of the background of the Sector/Utility the Workstation was assigned to run.



Figure 50 Workstation Assigned SPW Lab Monitor

The text color of the Workstation Button is used to indicate whether an assigned Workstation is loading or whether the Workstation has loaded successfully.

If the text color of the Workstation Button is white, then the Workstation is currently loading.



Figure 51 Workstation Is Loading SPW/Utility Assignment

If the text color of the Workstation Button is black, then the SPW/Utility loaded successfully.



Figure 52 Successfully Assigned SPW/Utility to Workstation

If the text color the Workstation Button blinks red and white, then there was a problem loading the SPW/Utility. For example, if the machine running TGF and the machine running the SPW/Utility are using different versions of the TGF Jar.



Figure 53 Problem Assigning SPW/Utility to Workstation

4.6.4.3 Sector and Utility Panel

The Sector and Utility Panel is located at the bottom of the SimPilot Manager GUI. This Panel provides color coded buttons for all Sectors and their Primary Frequency. In addition, the bottom row of the Sector and Utility Panel provides buttons for the following TGF Utilities:

- Aircraft Viewer – allows the user to view information about Aircraft. See Section 6 SAV for more information.
- JPVD – allows user to view traffic. See “TGF Java Plan View Display”.at www.faa.gov/go/tgf/ for more information.
- Sector Monitor – allows user to view information about which Aircraft are assigned to which Sector.
- SPW Lab Monitor – allows the user to view information about how the Lab is utilized.

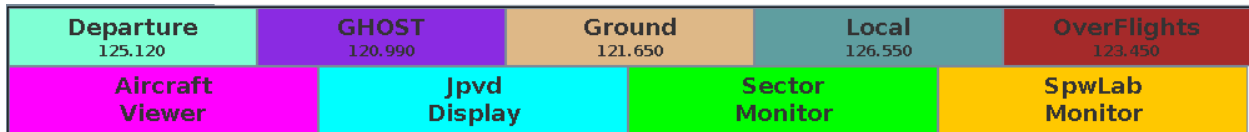


Figure 54 Sector and Utility Panel

The Buttons allow the user to assign a SPW/Utility to a Workstation. All the Buttons are color-coded to provide a visual clue as to what a SPW/Utility is assigned.

4.6.4.4 Assigning a SPW/Utility to a Workstation

This section contains information about assigning a SPW/Utility to a Workstation.

4.6.4.4.1 Configure Workstations

To assign a SPW/Utility to a Workstation click on the Item you want to assign. For example, the SPW Lab Monitor.



Figure 55 Selected Item

The text of the selected Item will turn white. Then click on the Button for an available Workstation that you wish to use this Item on.



Figure 56 Available Workstation

The selected Workstation Button's text have a gray border around it and its text will change to read what Item it is now assigned to. In addition, the Button's background will change to match the color the Item.



Figure 57 Selected Workstation

If you wish to assign the selected Item to another Workstation simply click on another Workstation Button. Otherwise, select a new Item. Repeat this process until everything is assigned the way that you want it.

4.6.4.4.2 Accept Changes to Workstations

Once done configuring Workstations, click on the Accept Changes Button. The Workstation Buttons for the assigned SPW/Utilities will change to read "Loading".



Figure 58 Loading SPW/Utility onto Workstation

Note: While a SPW/Utility is loading you may be unable to clear it or re-assign it.

4.6.4.4.3 Workstation loaded

The look of the Workstation Button will vary depending on whether the SPW/Utility loads successfully on the Workstation.

If the Workstation loads the SPW/Utility successfully, then the text color of the Workstation Button will be black.



Figure 59 Successfully Assigned SPW/Utility to Workstation

If the Workstation has an issue while loading the SPW/Utility, then the text color of the Workstation Button will blink red and white. For example, if the machine running TGF and the machine running the SPW/Utility are using different versions of the TGF Jar.



Figure 60 Assigned Workstation had a problem

In addition, a Window will appear to notify the user as to the problem that occurred.



Figure 61 Problem loading Workstation

4.6.4.5 Clearing a SPW/Utility from a Workstation

To clear an assigned SPW/Utility from a Workstation click on the Clear Button, then click on the Workstation Button to clear. The Workstation Button will change to the normal background color and its text will change to “Selected to Clear”.



Figure 62 Clearing Workstation

Once you have finished selecting Workstations to clear, click on the Accept Changes button. When the Workstation has finished clearing the Workstation Button should change to Available.



Figure 63 Available Workstation

4.6.4.6 Stand Alone SPWs

It is possible to load a SPW onto a System not listed in the SPW Manager using the SPW command line; however, if the user wants this SPW to receive data they must still push the Load SPW Button in the ECO.

Once the Stand-Alone SPW has connected to the ECO a Window will appear asking the user if they want to assign Aircraft to the Stand-Alone SPW.

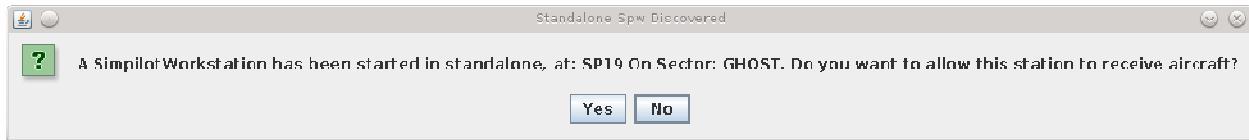


Figure 64 Assign Aircraft to Stand Alone SPW

4.6.5 Start/Restart Button

Once the TGF Simulation has finished loading the Start Button will be enabled. TGF currently has the following Epoch Managers that are used to determine how fast the clock should tick:

- Standard Epoch Manager – The clock will move at a normal rate, where a second of an epoch matches a second in real time.



Figure 65 Standard Start Button

- Fast-Time Epoch Manager – The clock will move as soon as TGF finishes updating all Aircraft in the Simulation and does not attempt to match the real passage of time. This is a non-standard option and therefore the Start Button's background will be red. For more information on the Fast-Time Epoch Manager please see Section 8: Optional Classes.



Figure 66 Fast-Time Start Button

Warning: usage of a non-standard Epoch Manager may cause external Systems to have problems as these Systems may not be designed to handle time speeding up.

When the Start Button is pressed its text will change to “Restart”, the Button will be disabled, and the Simulation clock will start ticking. In addition, the Pause and Terminate Buttons will be enabled.

4.6.6 Pause Button

Once the Start Button has been pressed the Pause Button will be enabled. When the Pause Button is pressed the Button will be disabled and the Simulation clock will stop ticking. In addition, the Restart Button will be enabled.

Warning: pausing a Simulation may cause external Systems to have problems as these Systems may not be designed to handle time stopping.

4.6.7 Terminate Button

Once the Start Button has been pressed the Terminate Button will be enabled. When the Terminate Button is pressed the Button will be disabled and the Simulation clock will stop ticking.

Warning: once the Terminate Button is pressed the user will be unable to restart the Simulation.

4.6.8 Quit Button

The Quit Button will close the TGF.

Warning: TGF will attempt to terminate the Simulation and bring down everything; however, it is best to press the Terminate Button before pressing the Quit Button in order to ensure that everything is terminated correctly.

4.7 Output Panel

This Section contains information on the Output Panel.



Figure 67 Output Panel

4.7.1 Save DR&A

The Save DR&A Checkbox is enabled once the Simulation is loaded. If the Box is checked, then the TGF DR&A File (if any) is saved. Otherwise, the DR&A File will be deleted when the TGF is closed. It is recommended that you save the DR&A File as it can be used to produce reports using TGF's DRAT.

4.7.2 Write History

The Write History Checkbox is checked then the TGF XML History file is saved. Otherwise, the History file is deleted when the Simulation is terminated. It is recommended that you save the History of a run as it can be used to create a Simulation Report.

4.7.3 Comments

The Comments Button is enabled when the Simulation is started. This Button displays the Comment Dialog, which allows the user to add information; such as project name and other comments, to the saved history of a Simulation. This is useful if you want to keep track of what was run during a simulation.

The image shows a software dialog box titled "Fill in History". It features a standard window header with a minimize button, a maximize button, and a close button. The main content area contains five labeled input fields stacked vertically: "Project Name:", "Location:", "Lab Time:", "Run Type:", and "Experimental Name:". Below these fields is a large, empty text area labeled "Comments" with a vertical scrollbar on its right side. At the bottom of the dialog, there are two buttons: "Okay" on the left and "Cancel" on the right.

Figure 68 Comment Dialog

4.7.4 Generate Sim Report

The Generate Sim Report Button opens a Text Editor which will contain text suitable for filing a Simulation Report.

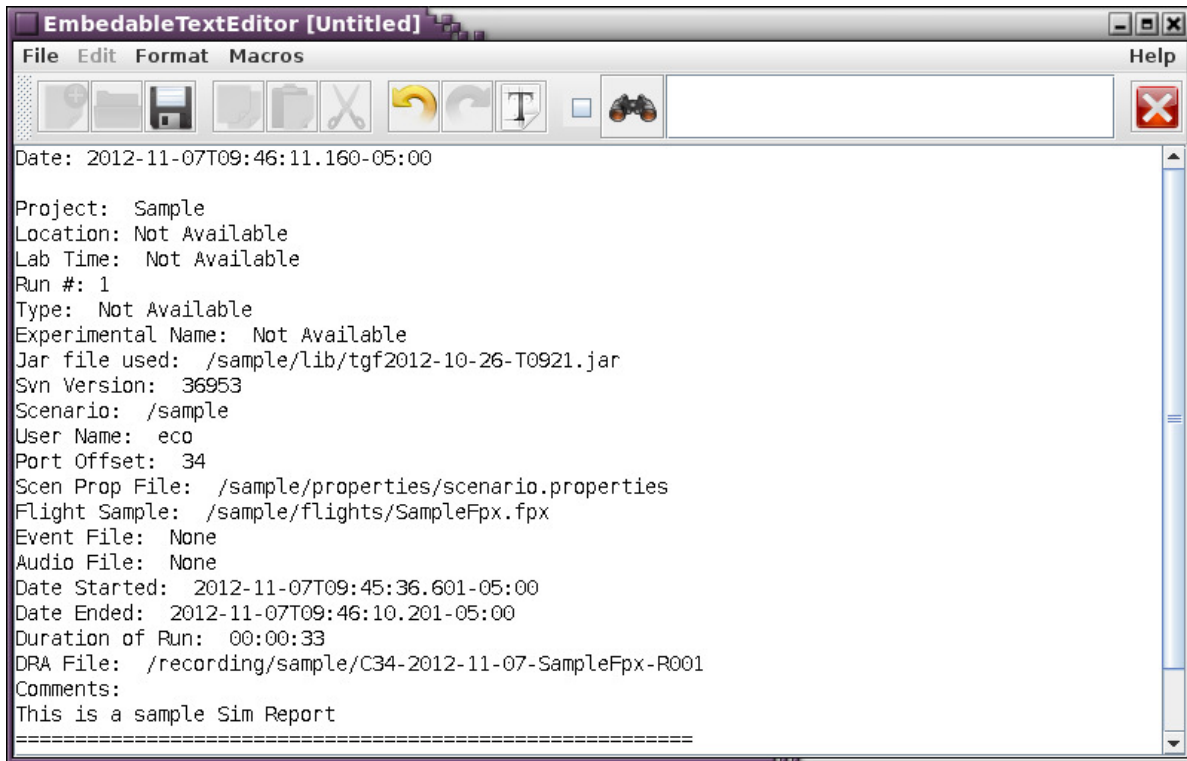


Figure 69 Sample Sim Report

4.7.5 JPVD

The JPVD Button is enabled once the Simulation is loaded. This Button allows the user to start TGF's JPVD. For more information on JPVD please see the "TGF Java Plan View Display" Manual available online at www.faa.gov/go/tgf.

If the user left clicks on the JPVD Button, then a JPVD is started using in-memory communication. This JPVD will close when the TGF closes. However, if the user right clicks on the JPVD Button the following options are offered:

- Run a stand-alone JPVD using TGF's Transfer Mediums. This option is useful for checking the data sent to other TGF Utilities/SPW.
- Run a stand-alone JPVD using Distributed Interactive Simulation (DIS). This option is useful for checking the data sent to some external Systems.
- Run JPVD using in memory communications.

At the bottom of the menu is an option to allow the user to leave up JPVD when the TGF is closed.

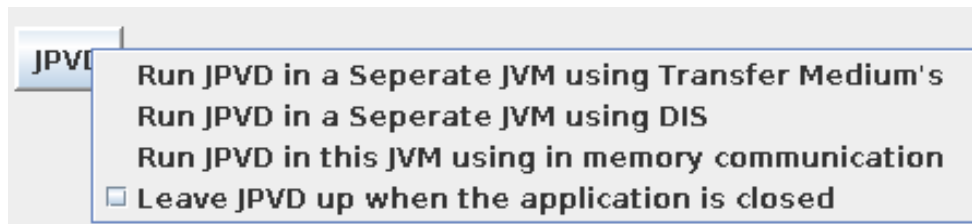


Figure 70 JPVD Right Click

4.7.6 TGF DR&A File Name Panel

The TGF DR&A File Name Panel displays the name of the TGF DR&A Recording file (if any).

TGF DR&A Filename: /recording/sample/C34-2012-10-24-SampleFpx-R001

Figure 71 DR&A Panel after Load Saved

If TGF DR&A recording is not enabled then the Panel will display a message to that effect and its background will be red.

TGF DR&A Filename: DR&A Recording not enabled

Figure 72 DR&A Panel after Load NOT Saved

4.8 Usage Panel

The Usage Panel contains information on usage of the Epoch and Memory.

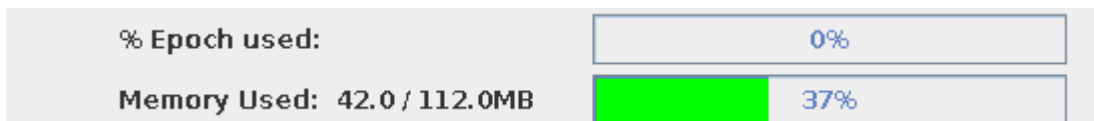


Figure 73 Usage Panel

4.8.1 Epoch Usage Panel

The Epoch Usage shows how much processing it is taking to update Aircraft. If the percentage of the epoch used is around 100% for a long period of time this may indicate that the Simulation loaded has too many Aircraft for the System running the TGF to handle.

4.8.2 Memory Used Panel

The Memory Used shows the current memory used and the current maximum memory available to the Java Virtual Machine (JVM). The maximum memory available will increase until it reaches a predetermined limit. The number for the maximum limit of memory used by the JVM is set by the Java parameter `-Xmx`. If the Simulation is unable to load due to an “Out of Memory” Exception it is suggested that the limit for maximum memory be made higher.

5 Message Window

The Message Window is a GUI designed to display log messages. These messages are configurable and can be turned off.

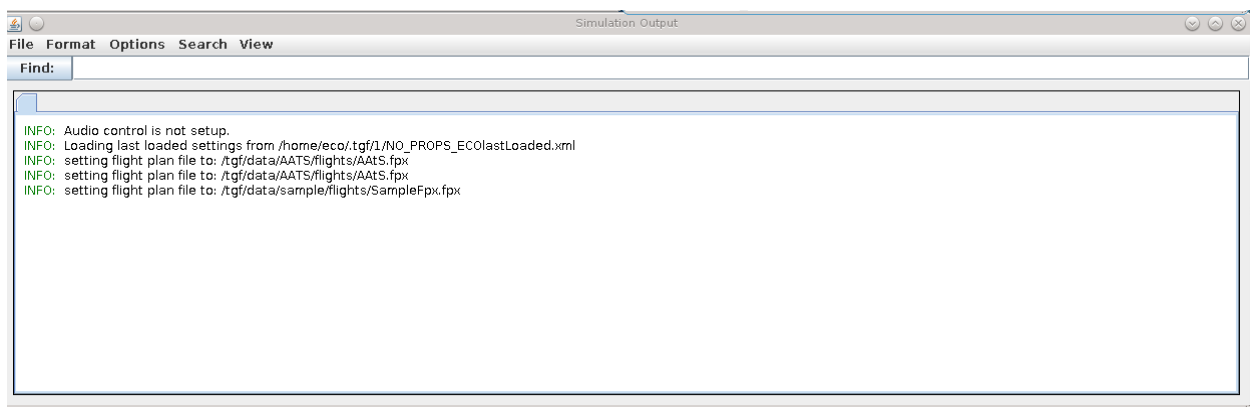


Figure 74 Message Window

The following types of log messages (in ascending order of severity) may appear in the Message Window:

- Debug – Messages used by TGF personal to track and correct a problem. These types of messages typically appear with the word “DEBUG:” in gray.
- Info – Informational messages for example, the Simulation has finished loading. These types of messages typically appear with the word “INFO:” in green.
- Warning – Messages used to notify the user that a potential problem may have occurred for example, an airspace data file was not found. These types of messages typically appear with the word “WARNING:” in yellow.
- Error – Messages used to notify the user that a problem has occurred for example, a Flight Plan was not parsed. These types of messages typically appear with the word “ERROR:” in red.

5.1 Message Window Menu Bar

This Section contains information about the Menu Bar found at the top of the Message Window GUI.



Figure 75 Message Window Menu Bar

5.1.1 File Menu

The File Menu allows the user to save log messages to a text file.

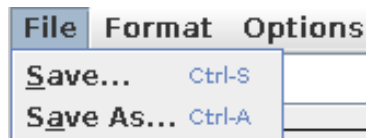


Figure 76 Message Window File Menu

5.1.2 Format Menu

The Format Menu allows the user to configure how messages will appear in the Message Window.

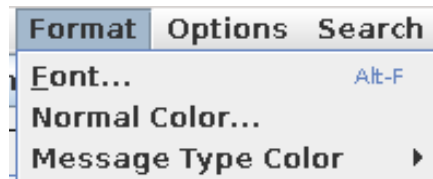


Figure 77 Message Window Format Menu

The Font Menu Option displays the Font Dialog which allows the user to change the Font used to display messages.

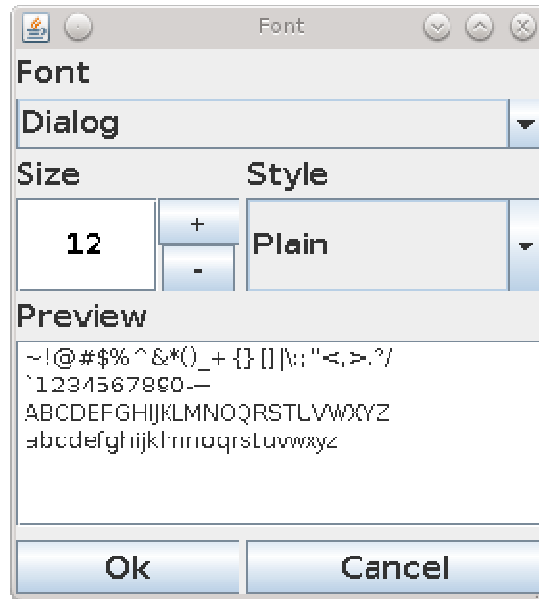


Figure 78 Font Dialog

The Normal Color Menu Option displays a Color Dialog that allows the user to change the color that normal message (any text after the type) text appears as.

The Message Type Color Menu displays options that display a Color Dialog that allows the user to change the color that a message type appears in.

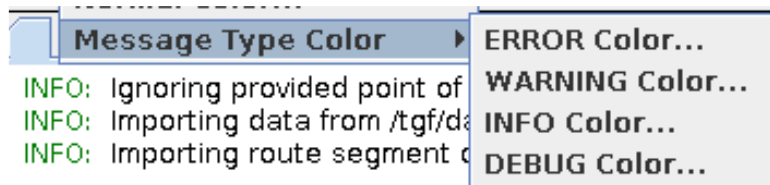


Figure 79 Message Type Color Menu

5.1.3 Options Menu

The Options Menu allows the user to set the following:

- Whether message headers are displayed. Message headers contain information about where a message originated.
- Whether to automatically scroll to the bottom of the Message Window.
- Whether to display messages in one color.

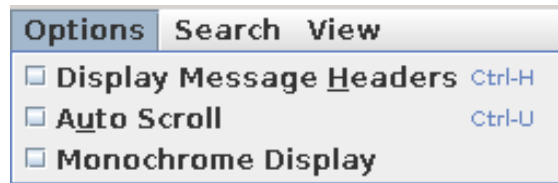


Figure 80 Message Window Options Menu

5.1.4 Search Menu and Search Button

The Search Menu allows the user to search for text in the Message Window. The Find Menu Option will display the Find Dialog.

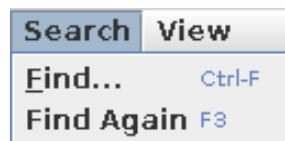


Figure 81 Message Window Search Menu

The Find Dialog allows the user to specify the text to look for, as well as whether the search should be case sensitive or look for whole words only.

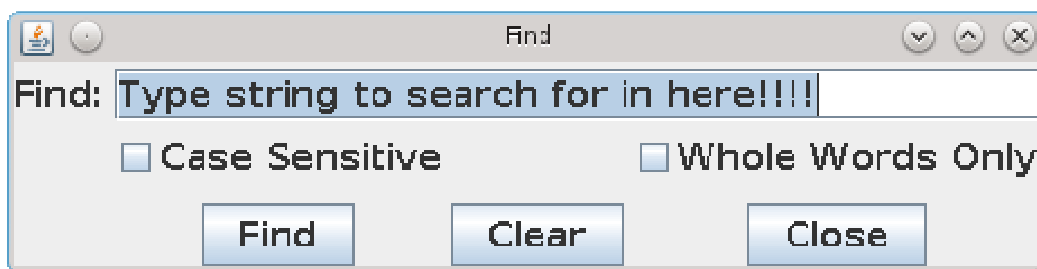


Figure 82 Find Dialog

The Find Button on the Message Window has a field next to it that is used to enter in the text to search for. The search uses the settings specified by the Find Dialog.



Figure 83 Message Window Find Button

The Find Again Menu Option allows the user to continue looking for text using the last search preformed.

5.1.5 View Menu

The View Menu allows the user to set what type of messages they wish to see.

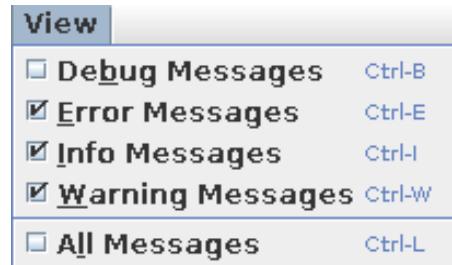


Figure 84 Message Window View Menu

6 SAV

The Simulation Action Viewer (SAV) allows the user to view information about Aircraft in the Simulation. The SAV can be split into the several components: Menu Bar, Simulation Information Panel, SP Command Panel, Aircraft List, Command Results Tab, and Aircraft Diagnostic (AD) Tab.

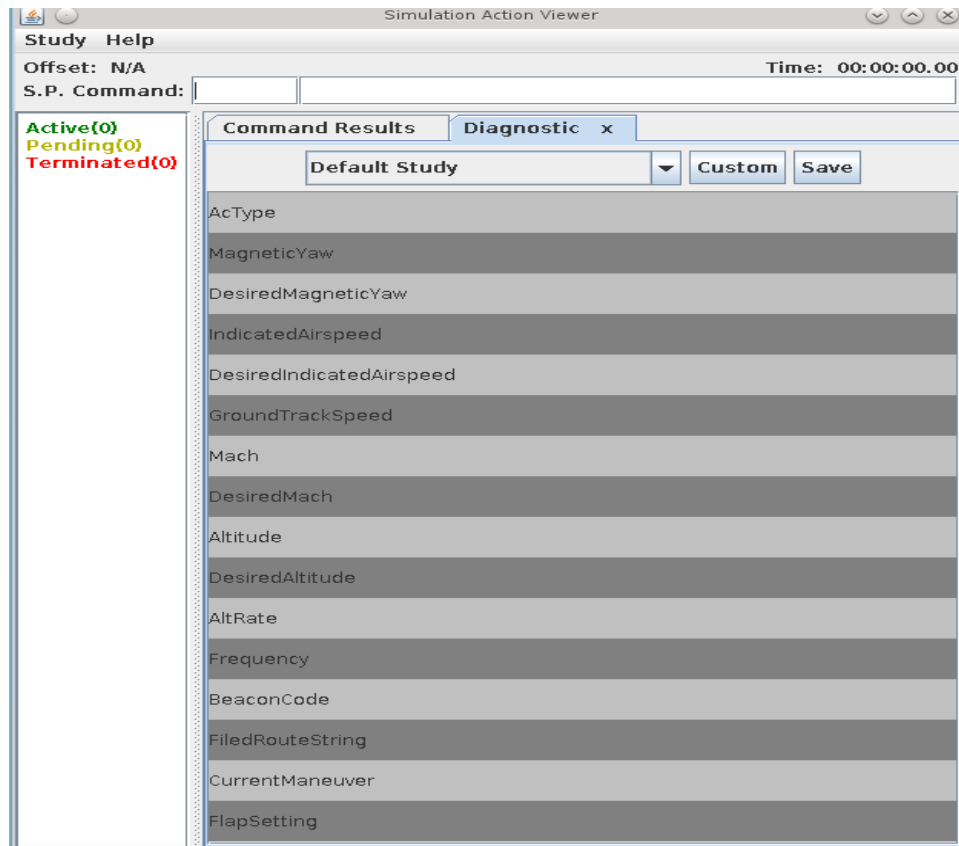


Figure 85 SAV

6.1 SAV Menu Bar

This Section contains information about the Menu Bar found at the top of the SAV GUI.

Study Help
Figure 86 SAV Menu Bar

6.1.1 Study Menu

The Study Menu contains Options that have to do with the information displayed in the currently selected AD Tab. The Save Menu Option allows the user to save the currently selected AD Tab's settings into a TGF Study XML File. The Record Menu Option allows the user to record the AD Tab's information about an Aircraft as Comma Separated Value (CSV) information via the Record Dialog.

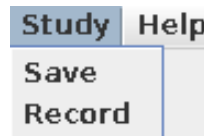


Figure 87 SAV Study Menu

To save the Study data, press the Record Button to display the Recording Dialog.

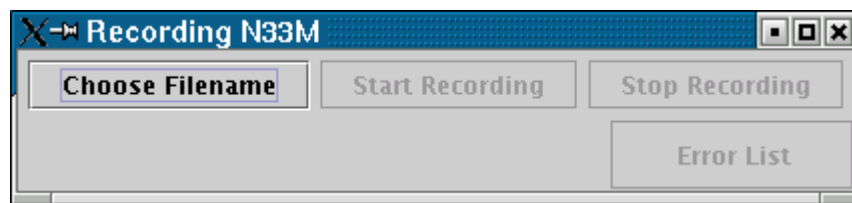


Figure 88 Record Dialog

Press the Choose Filename Button to select where to save the CSV data to.

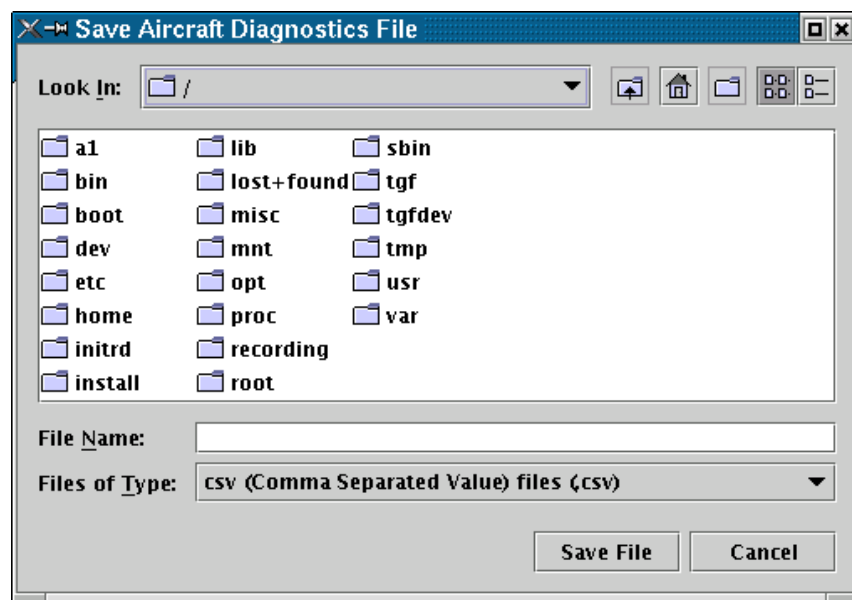


Figure 89 Save Record Dialog

After naming the file, press the Start Recording Button to start recording the study data. The file name that it is being saved to is displayed.



Figure 90 Record Dialog after File Selection

When all the necessary information is recorded, press the Stop Recording Button.

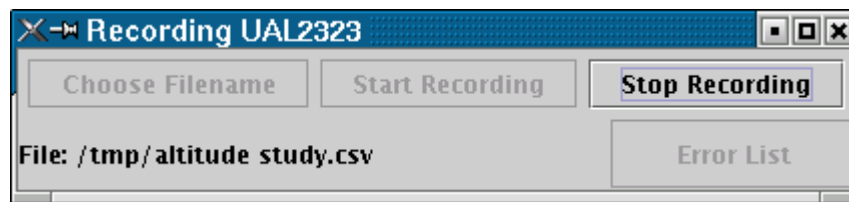


Figure 91 Record Dialog after Start Recording

When the file has been saved without errors, the success message is displayed. Otherwise, press the Error List Button to display the errors.

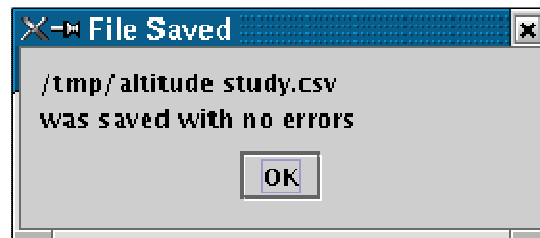


Figure 92 Successful Record Saved

6.1.2 Help Menu

The Help Menu allows the user to view helpful information.



Figure 93 SAV Help Menu

The Sim Pilot Commands Menu Option displays information on SimPilot Commands in a Text Editor.

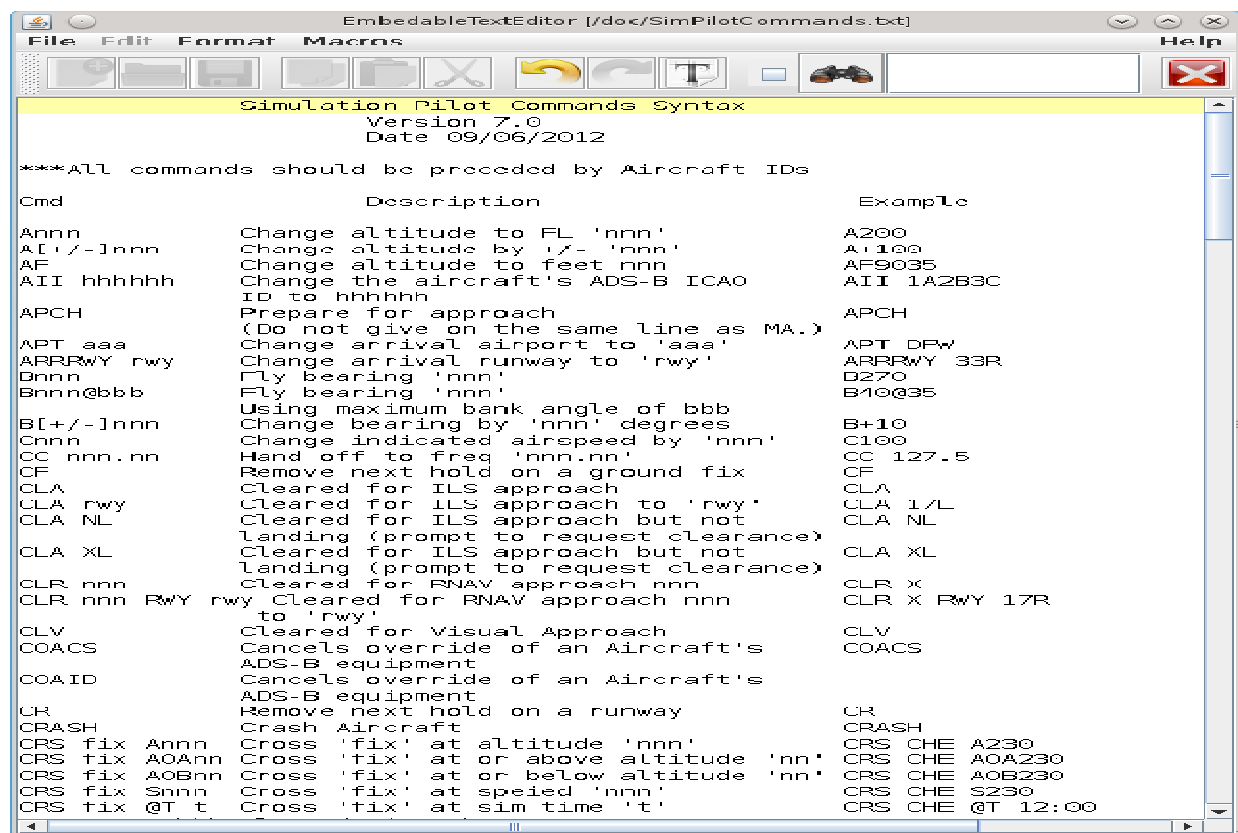


Figure 94 SimPilot Command Help File

6.1.3 Simulation Information Panel

The Simulation Information Panel displays the base port offset of the TGF the SAV is connected to. In addition, the current time in the Simulation is displayed.

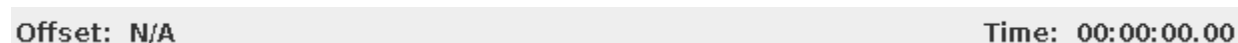


Figure 95 Simulation Information Panel

6.1.4 SP Command Panel

The SP Command Panel allows the user to enter in TGF SimPilot Commands. The first Field is the Aircraft Identifier (Acid). The user can select an Aircraft in the Aircraft List by clicking on its Acid or entering an Acid in the Acid Field to select the Aircraft. The second Field is the Command to issue to the Aircraft. The user can issue the command by hitting enter in the Command Field. For more information on TGF SimPilot Commands please see "TGF Simulation Pilot Operations (SPO)" at www.faa.gov/go/tgf.



Figure 96 SP Command Panel

6.1.5 Aircraft List

The Aircraft List contains a list of all Aircraft involved in a Simulation. The Aircraft are split into the following groups:

- Active – Aircraft in this list are currently flying or performing maneuvers on the ground.
- Pending – Aircraft in this list are currently waiting to start in the Simulation.
- Terminated – Aircraft in this list have terminated from the Simulation.

Active{0}
Pending{0}
Terminated{0}

Figure 97 Aircraft List

When you click on the any of Group Headers, each Aircraft in the Simulation in that group will be listed in ascending order by Acid.

Once the Simulation has been loaded, the number of Pending Aircraft is displayed. After the Simulation has been started, Active, Pending and Terminated Aircraft quantities will continually update during the Simulation as Aircraft begin or end.

When a specific Aircraft is selected from the list, the information displayed in the Default AD Tab will change to reflect the selected Aircraft.

Command Results	Diagnostic	x
<div>Default Study ▼ Custom Save</div>		
AcType		
MagneticYaw		
DesiredMagneticYaw		
IndicatedAirspeed		
DesiredIndicatedAirspeed		
GroundTrackSpeed		
Mach		
DesiredMach		
Altitude		
DesiredAltitude		
AltRate		
Frequency		
BeaconCode		
FiledRouteString		
CurrentManeuver		
FlapSetting		

Figure 98 Default Aircraft Diagnostic Tab

6.1.6 Command Results Tab

The Command Results Tab displays the results of the TGF SimPilot Commands issued during the Simulation in a table. The Command Table shows the time in the Simulation the command was issued, the Acid of the Aircraft the command was issued to, the frequency the Aircraft was on at the time, the command line, the individual command that was executed, any messages for TGF as a result of executing the command, whether the command was successful, and where the command originated. The Command Table may be sorted by any column simply by clicking on the columns title.

Command Results		Diagnostic		x			
Time	Acid	Freq	Input	Command	Message	Success	Source
00:00:00.1	EGF2764	126.550	CLA	CLA	Got landing clearance for approach to KDFW/17C	success	Route EGF2764
00:00:05.4	DAL1984	121.650	term	TERM		success	SimulationActionViewer
00:00:14	EGF2560	126.550	to	TO		success	SimulationActionViewer
00:00:19.4	AAL918	121.650	to	TO		success	SimulationActionViewer

Figure 99 Command Result Tab

6.1.6.1 Filtering Command Results Menu

If the user right clicks on the Command Table and no Row is currently selected, then a default Filter Menu is shown. This Menu allows the user to filter Command Results by Acid, Command, or Source by specifying a Java Regular Expression. For more information on Regular Expressions see Java's `java.util.regex.Pattern` in the Java Application Programming Interface (API). The user may also remove filtering.

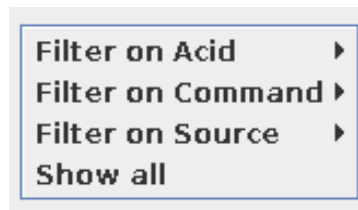


Figure 100 Default Filter Menu

If a Row is selected in the Command Table, then the Menu displayed will allow the user to Filter according to the following:

- Show only the Results issued at the same time as the selected Row.
- Filter Acid by either specifying an Acid or only the Results issued to the same Aircraft as the selected Row.
- Show only the Results issued to Aircraft on the same frequency as the selected Row.
- Filter Results by either specifying a Command Line or only the Results where the issued Command Line matches the selected Row.
- Show only the Results whose success status matches the selected Row.
- Show only the Results whose Individual Command matches the selected Row.

In addition, the user may remove filtering.



Figure 101 Row Selected Filter Menu

The Column Titles' in the Command Table will turn pink to indicate that the Command Results displayed are filtered.

Time	Acid	Freq	Input	Command	Message	Success	Source
00:00:05.4	DAL1984	121.650	term	TERM		success	SimulationActionViewer

Figure 102 Filtered Command Table

6.1.7 Aircraft Diagnostic Tab

The Aircraft Diagnostic Tab displays information about an Aircraft. The information displayed will continuously update for the selected flight while the Simulation is running and the Aircraft is active in the Simulation.

Parameter
AcType
MagneticYaw
DesiredMagneticYaw
IndicatedAirspeed
DesiredIndicatedAirspeed
GroundTrackSpeed
Mach
DesiredMach
Altitude
DesiredAltitude
AltRate
Frequency
BeaconCode
FiledRouteString
CurrentManeuver
FlapSetting

Figure 103 Sample Aircraft Diagnostic Tab

The information displayed in the AD Tab is determined by the TGF Study selected in the Study Combo Box. A TGF Study is an XML File which contains information to display about an Aircraft, for example, Indicated Airspeed.

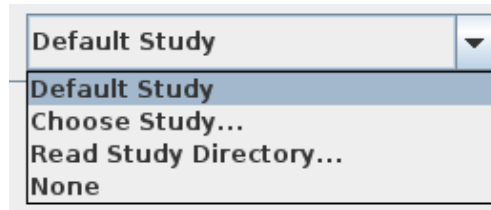


Figure 104 Study Combo Box

If there are no predefined TGF Studies, then the Study Combo Box will contain the following:

- Default Study – a TGF study included as part of the TGF Jar.
- Choose Study –allows the user to select a TGF Study using a File Browser.
- Read Study Directory – allows the user to designate the Directory where TGF Study files are located.
- None – allows the user to display no information in the AD Tab.

If the predefined TGF Studies are located in the Study Directory, then the Study Combo Box will display them in addition to the default information.

Each piece of information in a TGF Study is listed in a separate panel. The value of information in some panels can be configured via a Combo Box which allows the user to specify the units the value is displayed in. For example, the value of an Aircraft's current Indicated Airspeed can be specified in knots, kilometers per hour, miles per hour, etc.

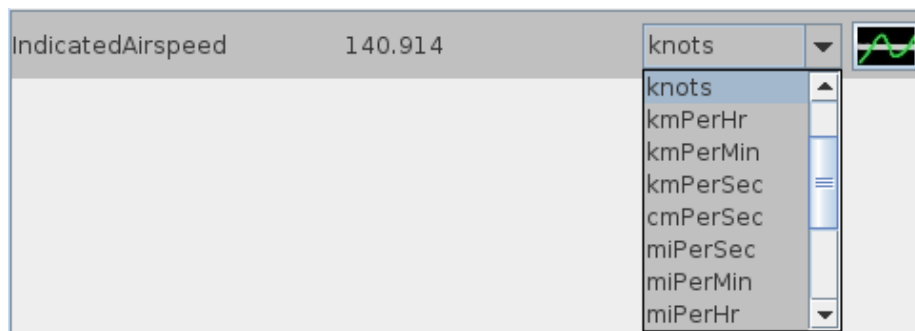


Figure 105 Sample Information with units

The value of the information in the panel can also be plotted as the Simulation is running via TGF Strip Charts simply press the Strip Chart Button located next to the Units Combo Box.



Figure 106 TGF Strip Chart Button

The TGF Strip Chart displays a plot of a selected Item of information, for example, Indicated Airspeed. The Title for the Strip Chart will be the Item, the units the Item is in, and the Aircraft the Item is being plotted for. Below the Title of the Strip Chart are the Simulation Time and the current value of the Item. The upper and lower bounds of the Strip Chart can be configured by

clicking on the numbers on the right side of the chart. If a Study is saved, any Strip Charts that are displayed will be saved with the AD information as part of the TGF Study.

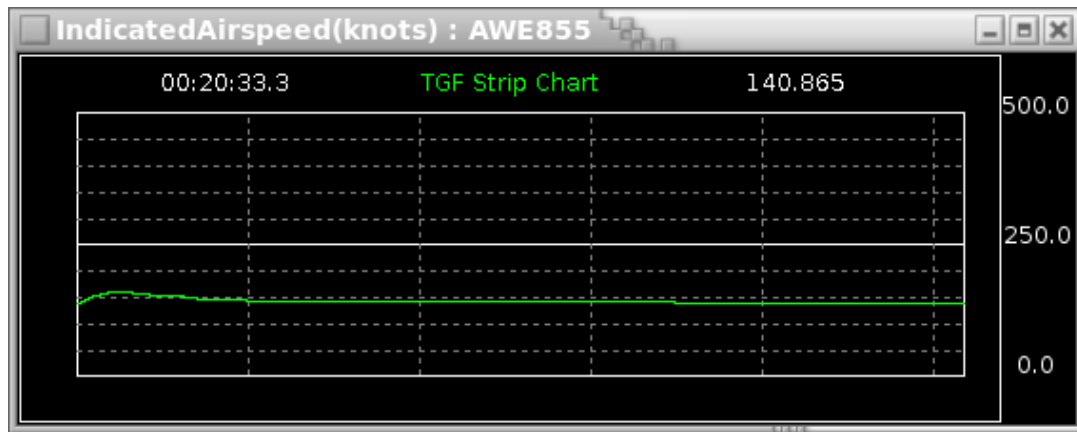


Figure 107 TGF Strip Chart

The data displayed in the Aircraft Diagnostic Tab can be customized via the Custom Button on the Tab. The Customize Dialog will display and the user can select which pieces of information to display.

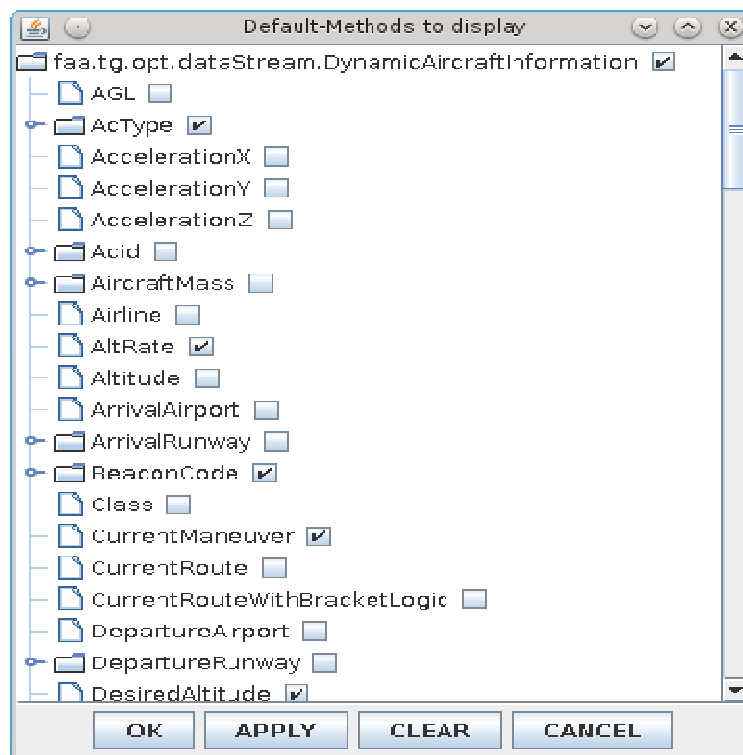


Figure 108 Customize Dialog

To save the information displayed in the AD Tab, click on the Save Button, which will save a TGF XML Study. This TGF Study can be reused via the Study Combo Box.

If the user wants to display information about multiple Aircraft at one time they can double click on an Aircraft to create an AD Tab for that Aircraft. The AD Tabs can be dragged off the SAV. When the X Button on an AD Tab is pressed the Tab will close. If all Tabs are closed, then the user can click on an Aircraft in the Aircraft List to display the Default Aircraft Diagnostic Tab.

7 Directory Structure

TGF organizes project and Simulation information in a Scenario Directories which contains several sub-directories. Each sub-directory holds some of the information necessary to run a Simulation. When you need to change information in certain files or to create additional files, make sure that it is saved in the correct directory for the TGF to work properly. The following is the typical Scenario Directory structure:

- lib – Directory that TGF Jar for a project is usually found in.
- properties – Directory of TGF property files which contains the following files:
 - eco.props – This property file contains information such as where TGF data is located. The ECO Properties file passed onto TGF via the `-p` command line option. This file is ignored by Scenario selection component. For more information on the `-p` command line option please see Section 9: Command Line Options.
 - Various Scenario Properties files – A Scenario Properties file contains information that is Scenario-specific, such as where to save the TGF DR&A Recording. These files are selected by the user via the Properties Panel. Any duplicate TGF properties in the file will override most properties passed in via the `-p` command line option.
- maps – Contains the following Map data:
 - JPVD configuration files
 - TGF Height Maps
 - Airport Surface Detection Equipment, Model X (ASDE-X) Maps
 - Geographical (GEO) Maps
- bin – Contains scripts to run the Simulation
- airspace – Contains the following Airspace data:
 - Fix XML
 - Route XML files includes the following
 - Airways
 - Standard Instrument Departure (SID) Route
 - Standard Terminal Arrival Route (STAR)
 - Alternate Departure Route (ADR)
 - Military Routes
 - Alternative Arrival Route (AAR)

- Airport XML includes data on Runways and Approaches
 - Ground XML files includes the following:
 - Ground Airport
 - Taxiways
 - Ground Fixes
 - Ground Fix Connections
 - Sector Information
 - Sector XML – Contains frequency and sector names
 - Geographical Layout of Sector – includes the following:
 - Fpa (Fixed-Posting Area) XML
 - Node XML
 - TGF Region XML
- project – contains Project specific data
 - Static Sim Event files
 - Optional Classes
 - Weather Files – includes the following types of Weather files:
 - Ruc236 Weather
 - Wind Strata
 - ASDE-X Configuration Files
 - Trajectory Files
 - Radar Files
 - Radar Message Files
 - DIS Specific Types
 - Shape Files – this includes TMF files
 - Audio Maps
 - Other
 - study – Contains a collection of the XML AD Study files that are useful to view the status of an Aircraft using the SAV. This Directory is optional, TGF will give a warning message if this directory does not exist.
 - flights – Contains the following data:
 - FPX files
 - Sim Event files associated with an FPX file

The location of files can be configured via TGF Properties files. For more information on TGF properties files, please use TGF's Properties Editor as it was designed to make creating and editing TGF Properties Files easier.

8 Optional Classes

The Optional Classes File contains TGF Java Classes that may be optionally loaded into TGF. These classes are usually interfaces to external Systems or changes to the Epoch Manager.

The file consists of the following elements (all Elements are required and occur once unless otherwise noted):

- XmlClassLoader – Root Element for File
 - Class (optional) – Individual Element for each Optional TGF Class to load.
 - Load – can be one of the following values:
 - ask – Ask the user if this class should be loaded.
 - yes – Automatically load this class.
 - no – Do not load this class.
 - ConstructArg – one Element for each Constructor Argument the class has
 - ArgName – a name for the argument (optional)
 - ArgType – the type of the argument (optional)
 - ArgValue – the value of the argument

For example, the Fast Time Epoch Manager TGF Class is `faa.tg.executive.FastTimeEpochManger` and it has one Constructor argument, which is the number of seconds the TGF Simulation should run before it terminates.

```
<?xml version="1.0" encoding="UTF-8"?>
<XmlClassLoader xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:
noNamespaceSchemaLocation="tgfresource:/xml/eco/OptionalClasses.xsd">
  <Class>
    <Load>ask</Load>
    <ClassName>faa.tg.executive.FastTimeEpochManager</ClassName>
    <ConstructArg>
      <ArgValue>14500</ArgValue>
    </ConstructArg>
  </Class>
</XmlClassLoader>
```

Figure 109 Sample Optional Classes File

Please contact the TGF support personnel for help in setting up this file.

9 Command Line Options

The Table below contains the Command Line Options for running TGF. These options go after the TGF Jar. Note: All command line options are optional unless otherwise stated.

Short Form	Long Form	Definition
-o	--offset	The Offset to run TGF on.
-p	--properties	The ECO properties file.
-t	--tgfDir	The Directory to find TGF Scenario Data in.
-X:g	--X:gui	Use a GUI to get command line options. Tries to use values stored in XML (if any) to fill in Command Line GUI.
-X:h	--X:help	Prints out Command Line Arguments to Command Line Terminal and exits.
-X:v	--X:version	Prints out version information to Command Line Terminal and exits.
-X:x	--X:xml	Use either given commandLine.xml file. If no file is specified with this option, then the default file used is usually found in the user's home directory under a directory called commandLineXml in a file called faa.tg.eco.ecogui.EcoGUI_commandLine.xml. For example: /home/commandLineXml/faa.tg.eco.ecogui.EcoGUI_commandLine.xml

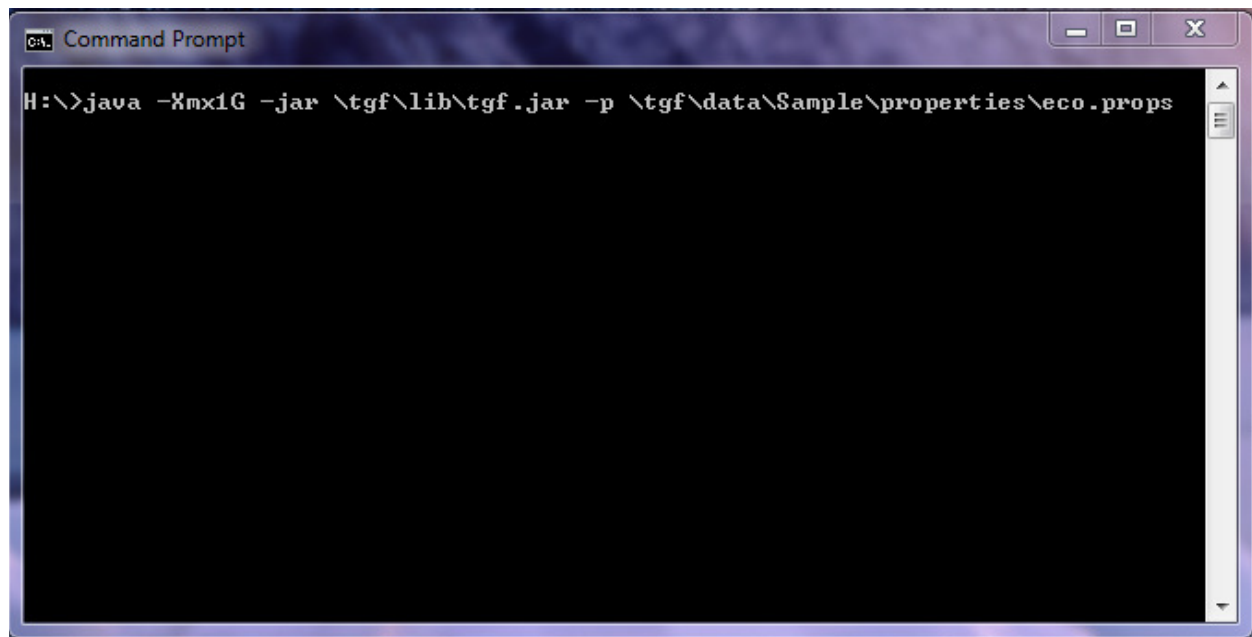


Figure 110 Sample Command Line

10 Troubleshooting TGF

If a problem occurs it is essential to provide TGF Support Personnel with the following to enable them to track down and address the problem faster:

- The name of the Simulation/Scenario
- The TGF Recording File
- The version of TGF running – Please see Section 4.1.7 Help for more information on how to find this information out.
- If Aircraft are involved, provide the Aircraft Call Sign(s)/Acid(s)
- Approximate time in the Simulation that the problem occurred
- Message log if applicable – Please see Section 5.1.1 File Menu for more information on how to save a message log.
- Detailed description of the problem.